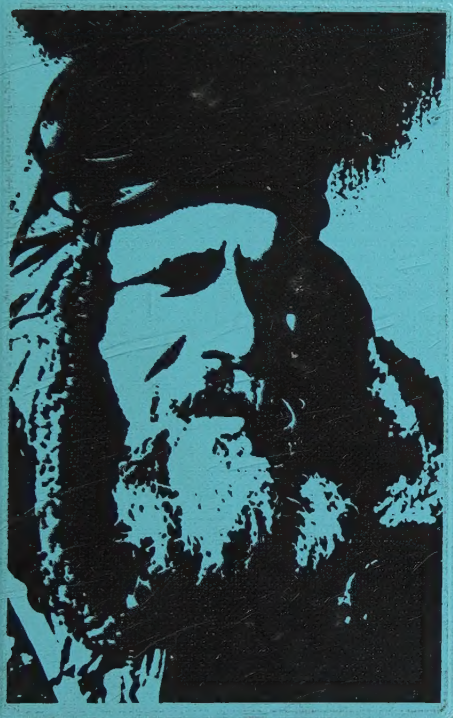

ANTARCTICA : A NEW LOOK

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ANTARCTICA:

A NEW LOOK

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"We can now definitely locate the South Pole on the highest plateau in the world, and our geology and meteorology will be of great use to science: But man can only do his best, and we have arrayed against us the strongest forces of nature."

E.H. Shackleton, 1909

Davisville/Quonset are left behind for season

Each September sees the beginning of the great migration for National Science Foundation researchers and U.S. Navy support personnel from the Davisville and Quonset Pt., R.I. area to the far-off Antarctic. It is the beginning of five months of intensive effort in unlocking the many secrets held in the frozen grip of the world's southernmost continent.

TAXIING OUT from the parking area, three LC-130 Hercules aircraft of Antarctic Development Squadron SIX (VXE-6) begin the long trip.

NEW ZEALAND CUSTOMS officials check the baggage of the sailors and scientists transiting on their way to the Antarctic.

WHILE AWAITING HIS FLIGHT to the ice, Seaman Tom Lane takes the opportunity to see a bit of Christchurch and do some shopping.

HAVING LUNCH by the banks of the Avon River, which runs in serpentine fashion through the city, two girls enjoy the Spring sunshine.

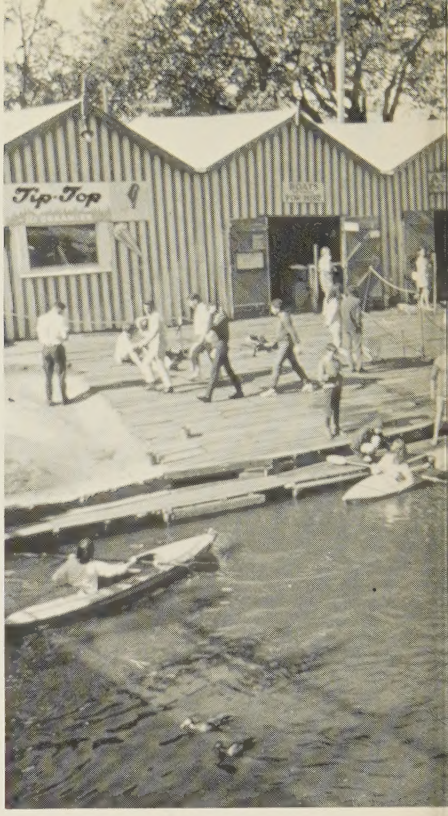
Christchurch offers a look at New Zealand

HOLDING A REPUTATION as the "Garden City", Christchurch has long been noted for the abundance of beautiful gardens and plots, not only at homes, but around industrial sites as well.

One of the first things sailors and scientists on their way to Antarctica notice about New Zealand is its unhurried pace of life. The unofficial motto, more truthfully than kiddingly, is "she'll be right". Consequently, the New Zealander seems to have more time to enjoy life as he finds it, usually with a rod and reel, in the garden, or at the corner pub. It's a great place to prepare for the season ahead.

WALKING ALONG A PATH in one of Christchurch's parks is one enjoyment of a N.Z. stay, while (BELOW) hundreds of tulips show evidence of careful nuturing in an "English garden-like setting."

THE FIRST SIGHT a U. S. visitor to the Antarctic gets of New Zealand, is usually (ABOVE) the Christchurch International Airport.



ROWING ON THE AVON RIVER is another treat not to be passed up by shallow-water sailors. The Avon is seldom more than knee deep.

LUNCHTIME ON A PARK BENCH is a treat for many who find a shady spot in one of the city's parks a welcome mid-day break.

Quiet pace gives rest before polar activity

CHECKING THE QUALITY of wool from the Spring shearing, a buyer determines the price he will offer at the auction later that day.

SENDING A MESSAGE, Radioman second class John Fisher (LEFT) uses a teletype, while (ABOVE) Air Controlman Tim Wallace plots the position of an aircraft returning from a mission to the Antarctic.

HANDLING CARGO bound for the ice, Storekeeper first class Roy Graham (LEFT) stacks boxes for loading on an aircraft.

REPAIRING AN ELECTRICAL FAULT in a C-130 Hercules engine, Electrician's Mate second class Andy Piper (RIGHT) assists in a major check of the aircraft at the squadron's Christchurch facility.

CHECKING A CARGO MANIFEST (BELOW) Storekeeper first class William Weissner (1.) and Mr. Trevor Grice see that all purchases have arrived.

Navy support in N.Z. makes ice job easier

In Christchurch, the Navy's Detachment DELTA provides liaison with local offices and purchase points and serves as the all-important last link between outside world and the ice. Antarctica Development Squadron SIX (VXE-6) also keeps a year-round group of men there to maintain equipment and provide major maintenance when aircraft transit from the ice needing large repairs. The National Science Foundation plans with the N. Z. Department of Scientific and Industrial Research, Antarctica Div., for cooperative research programs, and trades logistic assets for mutual benefit.

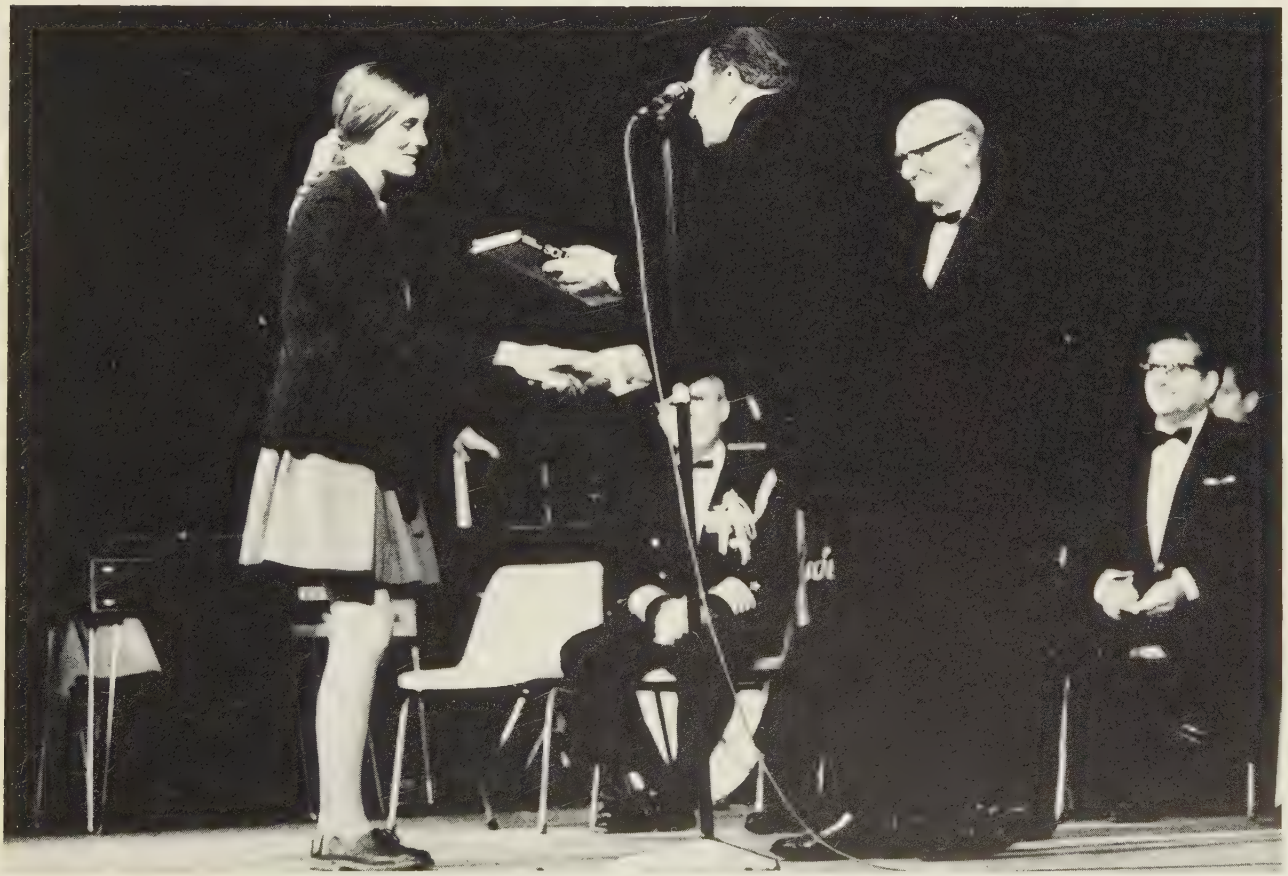
Antarctic Week gives look at polar programs

The first Antarctic Week in seven years was held 16-22 October 1972 to reacquaint New Zealand citizens with the U.S. and New Zealand Antarctic programs. The New Zealand Department of Scientific and Industrial Research, Antarctic Division, the New Zealand Antarctic Soc., Canterbury Branch, the U.S. National Science Foundation, Office of Polar Programs, and the U.S. Navy's Operation DEEP FREEZE combined for a week of broadcasts, films, and displays of equipment and methods used in research and logistic support on the frozen continent.

VILLA MARIA COLLEGE student Maureen O'Rourke accepts her essay contest prize from City Councillor William Massey, for her theme on cooperative aspects of the Antarctic Treaty.

ASSEMBLED GUESTS at the new Christchurch town hall hear Dr. George A. Llano, National Science Foundation representative, deliver speech during Antarctic Week's special Civic Evening. More than 500 attended.

CHRISTCHURCH MAYOR Nevil Pickering signs a proclamation declaring "Antarctic Week" open as the National Science Foundation representative, Dr. George Llano, witnesses the signing.

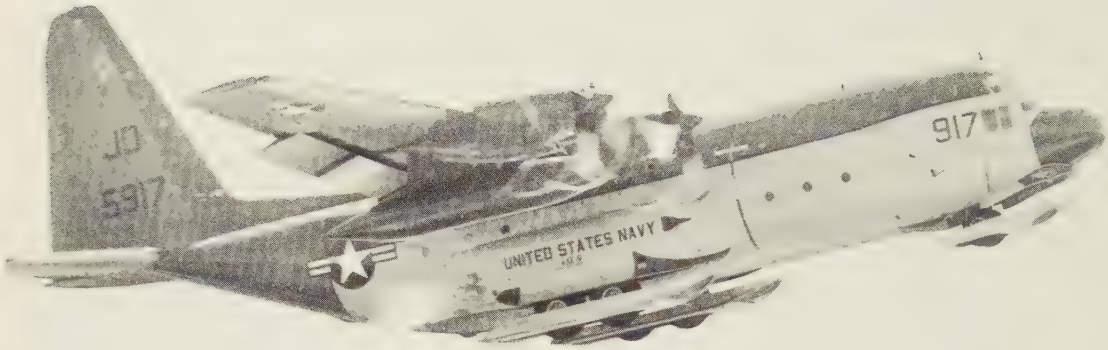


FROM MELLOW TO METALLIC, Pacific Fleet Band provides either a detached feeling of softness (LEFT) or the brassy modern sound reflected (ABOVE) in a horn bell during a school concert.

Pacific Fleet band played to large crowds

A LARGE LUNCHTIME CROWD gathers in a downtown Christchurch park (RIGHT) to hear the band perform an hour-long concert.

URGING A ROUSING FINISH, Pacific Fleet Band leader, Lieutenant j.g. Phillip Field conducts the group in a Latin arrangement.



PENSIVELY WATCHING the displays and demonstrations crowding the airport parking area, a young miss is lost in wonder.

An open house ended the week on a high note

Open House, or "open day" for the New Zealanders, was a day full of sights and sounds of Antarctic personnel, equipment and displays which were viewed by an estimated crowd of more than 20,000. It was designed to give the New Zealand public a better understanding of the U.S. and New Zealand Antarctic programs, and to raise funds for the new Antarctic wing of the Canterbury museum which houses many unique polar artifacts.

A CHRISTCHURCH POLICEMAN surveys the open house crowd. Officials estimated the attendance to be more than 20,000 persons.

A VXE-6 HERCULES aircraft delights the crowd (LEFT) with a jet-assist-takeoff (JATO) during the open house celebration.

THREE YOUNG BOYS are taken by the sights of aircraft and equipment used for transport and research in the Antarctic.

AWAITING THEIR TURN (LEFT) members of the VXE-6 para-rescue team prepare to leap from the ramp of a Hercules aircraft.

TOWN TALK participants Captain Alfred N. Fowler, Commander Task Force 43, and Robert Thomson, Superintendent of the Antarctic Division of New Zealand's Scientific and Industrial Research Department talk about Antarctic Week activities during special NZBC radio program.

FILLING THE LANDSCAPE with color, the Emperor Penquins at Cape Crozier (RIGHT) provide biologists opportunity for close examination.

REGIONS OF STRATIFIED mountains throughout the Antarctic give evidence (BELOW) of the composition and development of the continent.

WALKING ACROSS an icy region, two photographers find that although sometimes relatively flat, (ABOVE) the surface is rarely featureless.

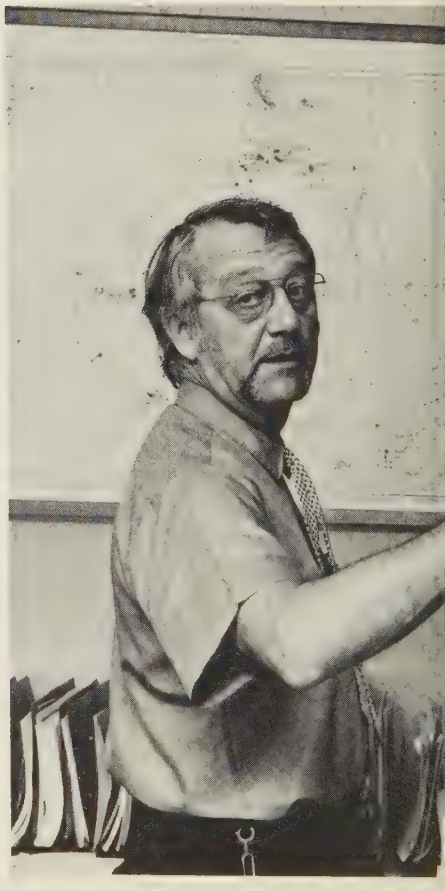
The Antarctic landscape is usually found awesome

Whether a microbiologist or geologist studying the many scientific offerings of the region, or a Seabee tractor driver or welder supporting the efforts of the researchers probing for data, one observation is shared by all - that of the spaciousness and grandeur of the Antarctic Continent. The sprawling Antarctic is five-and-a-half million square miles of ice and snow, which at places is nearly three miles thick. The 7,500 foot average elevation makes it the highest of all continents. The highest point is Vinson Massif, which towers nearly 17,000 feet in Western Antarctica. This giant freezer which holds 95% of the world's ice is actually weighted down by that ice, and would rise a significant degree if the ice were removed. At the same time, if the ice were to completely melt, the oceans of the world would rise by about 200 feet.

DISCUSSING A PROBLEM, Price Lewis, manager for polar operations, confers with the associate manager, Navy Captain Eugene W. Van Reeth.

Polar programs officials guide research efforts

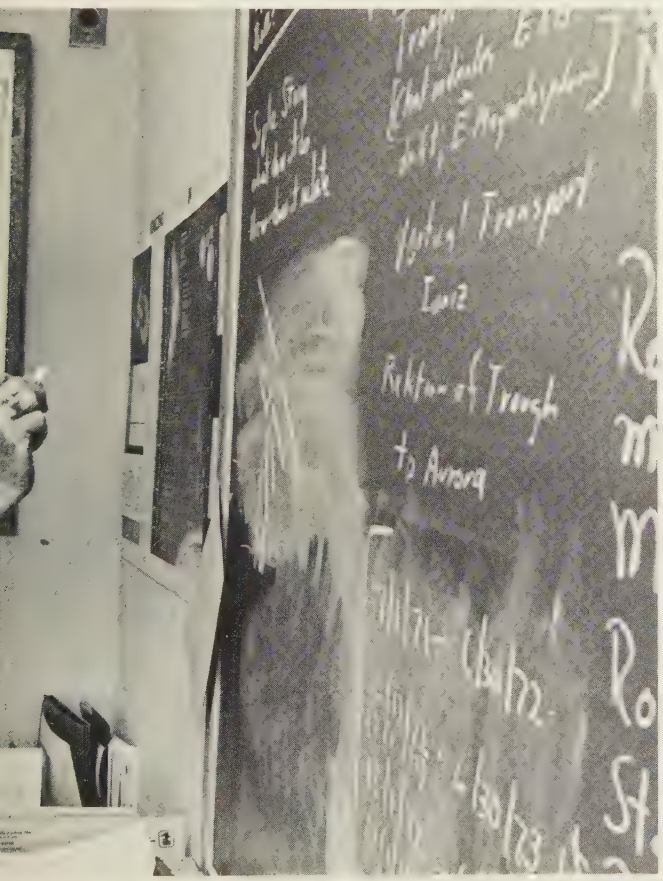
A summer of antarctic research, and the logistics needed to support it, begins in Washington in the National Science Foundation's Office of Polar Programs. Program managers chart projects in glaciology, geology, geophysics, atmospheric physics, biology, and oceanography to help researchers understand Antarctic's role in global processes: Why are the dry valleys dry? How does the Antarctic influence world climate? While the National Science Foundation plots the course of antarctic research, the Navy, the Air Force, the Coast Guard, and private firms under contract to the Foundation fly the planes, sail the ships, man the stations, and operate the laboratories. U.S. antarctic research has been conducted continuously since the International Geophysical Year (1957-1958) with programs and emphasis changing to meet the needs of researchers, and to allow the conduct of the most efficient program possible.



PLOTTING THE ARRAY of antennas at Siple Station, Raymond R. Heer, (BELOW) program manager for polar atmospheric studies, uses a blackboard.

PLANNING OPERATIONS, Walter Selig, (ABOVE) international coordinator, discusses a point with Joseph Fletcher, head, office of polar programs.

TALKING WITH A SCIENTIST, Dr. Gunter E. Weller, program manager for polar meteorology, (BELOW) explains the program at the South Pole.



Antarctic aircraft used for varying missions

There is little doubt that the advent of the C-130 "Hercules" aircraft in Antarctic exploration and science support activities, has increased the capability and scope of operations to a dramatic degree. The ski-equipped Hercules now allows great tonnages of cargo and men to fly to remote science sites formerly accessable only after long and arduous over-land travel with small payloads. The only DEEP FREEZE aircraft in current use capable of landing at inland stations with cargo, the aircraft are operated by Antarctic Development Squadron SIX (VXE-6). Wheeled versions of the same aircraft have been flown since 1967 by the Royal New Zealand Air Force, and in the 1972-73 season by the Royal Air Force as well. No less important in delivering many tons of high priority cargo to McMurdo Station's ice runway are the C-141 "Starlifter" jet aircraft operated by the Military Airlift Command (MAC) while the ice will still support their massive frames.

WAITING FOR THE PLANE, a team of New Zealand sled dogs prepares to take the cargo to their home at nearby Scott Base.

UNLOADING A FIELD PARTY on the Lassiter Coast, a VXE-6 LC-130 crew puts the research team in position for their study

ON THE ICE RUNWAY, a Royal Air Force C-130 taxies up to the cargo area to unload its precious cargo before returning for another.

Aircraft provide vital service in polar supply

ON FINAL, and ready to land, a ski-equipped C-130 Hercules crosses the end of the runway (LEFT) at McMurdo Station's Williams Field on returning from a flight to South Pole Station with fuel and cargo.

PREPARING TO UNLOAD its many tons of cargo, a C-141 Starlifter sits on the ice parking lot waiting to take on more passengers for the 2,300-mile return trip to Christchurch, New Zealand.

McMurdo Station is largest Antarctic town

Because of its size and population, McMurdo Station is often called "the New York of the Antarctic". It is the headquarters on the continent for both scientific operations and logistic support, and serves as both the sea and air terminus for the great majority of men and cargo coming to the area in the U.S. science program.

EXPLORING A NEARBY ICE CAVE, a Scott Baseman finds beautiful formations of ice and snow that have remained unchanged for years.

SUNSETS REFLECTING OFF CLOUDS in the McMurdo Sound area (LEFT) often make for spectacular displays of light and color on the water.

CLEARING THE ROAD to McMurdo Station, a snowblower (BELOW) reopens the passage from the airstrip after a major storm.

Volcanic ash covers the area like a blanket

MELTING SNOWS OF SPRING cause rivers of running water (ABOVE) to flow through McMurdo making mud when mixed with the ash.

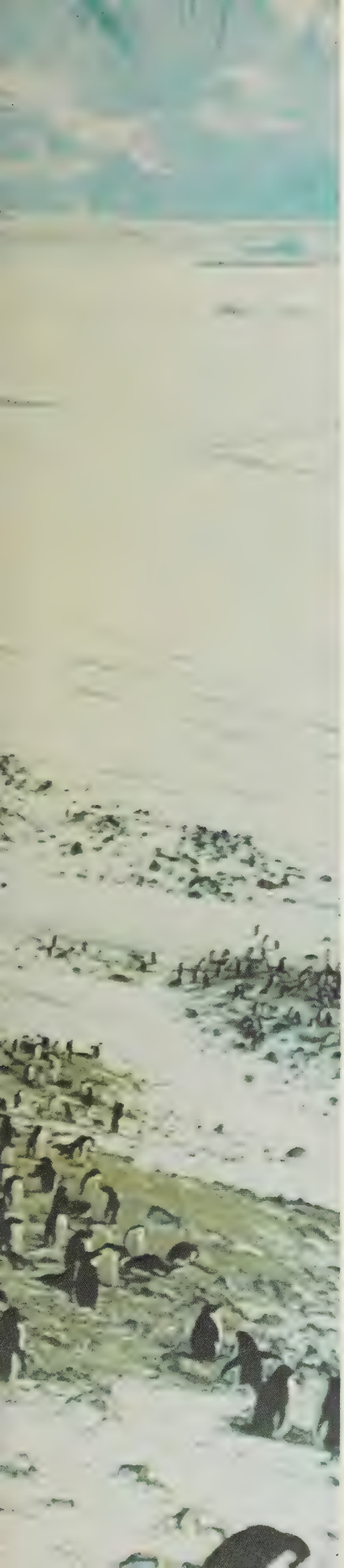
LOOKING DOWN ON MCMURDO in late October (LEFT) shows snow covering the town and the as-yet-unbroken sea ice crowding the shore.

Hallett Station crowd likes formal dress look

Nearly 400 miles north of McMurdo Station is Hallett Station, occupied by a handful of men and an estimated 200,000 penguins. Named for the purser on Ross' ship "Erebus" in 1841, Hallett serves primarily as a communications and weather reporting facility on the air route from Christchurch to McMurdo, but functions in a science research role somewhat reduced from its original level. It was a year-round station when constructed in 1957, and was jointly operated with New Zealand until 1965, with the science leadership alternating between the countries. It is undoubtedly one of the most scenic regions of Antarctica, highlighted by the Admiralty Range of mountains.

HUNDREDS OF THOUSANDS of penguins make Hallett Station a biologist's dream in conducting research on these aquatic birds.

BROKEN OFF from a nearby glacier tongue (BELOW) a large iceberg drifts past Hallett Station on its way out to sea.



The station opens for a new season

CLEARING SNOW from buildings, a Caterpillar "Traxcavator" makes it possible to move freely (RIGHT) when reopening the station.

MELTING SNOW in the galley to use for water in making lunch, an early season arrival (RIGHT) lights the burner.

REPAIRING POWER LINES damaged during a winter storm, a lineman (RIGHT) secures the connection to an insulator on a power pole.

WITH THE ADMIRALTY RANGE as a backdrop, A VXE-6 Hercules (BELOW) brings cargo to the ice runway at Hallett Station.

Old South Pole Station gets ready to retire

Established at the South Geographic Pole, and named for the first men to reach this location, Roald Amundsen and Robert Falcon Scott, Amundsen-Scott station is another of the original IGY scientific stations. The first construction party arrived on November 20, 1956 and the station was dedicated on January 23, 1957. Originally built on the surface of the Polar Plateau at the exact coordinates of the pole, the station has long since been covered by about 30 feet of drifting snow, and has been moved by the shifting ice-cap about a half-mile away from this position. Being slowly crushed by this snow and movement, a new station is under construction about a mile away, under a geodesic dome, on the surface. Studies at the station include aurora and airglow, glaciology, ionospheric physics, seismology, geomagnetism and cosmic rays.

INTERUPTING THE FLAT SURFACE of the Polar Plateau, the 50-foot-high geodesic dome will house a new South Pole Station.

TAKING OFF from Old South Pole Station, an LC-130 Hercules takes an empty drum back to McMurdo after airlifting needed fuel.

A DEEP HOLE in the surface is all a visitor sees of the undersnow station until he descends the more than 30 feet below the ice.

HANDLING FUEL TRANSFERS to the Pole is Aviation Boatswain's Mate Third Class John F. Hunt's job during the summer season.

Vapor turns to frost, and stays

WORKING OUTDOORS frosts the headpiece of LCDR Mario Costaldi, helping out as station doctor, and fuels officer.

A BRIGHT CLOUD of steam hangs like a cloud over the surface of South Pole Station. Because of the extreme temperature, water vapor will often freeze instantly and fall as ice.

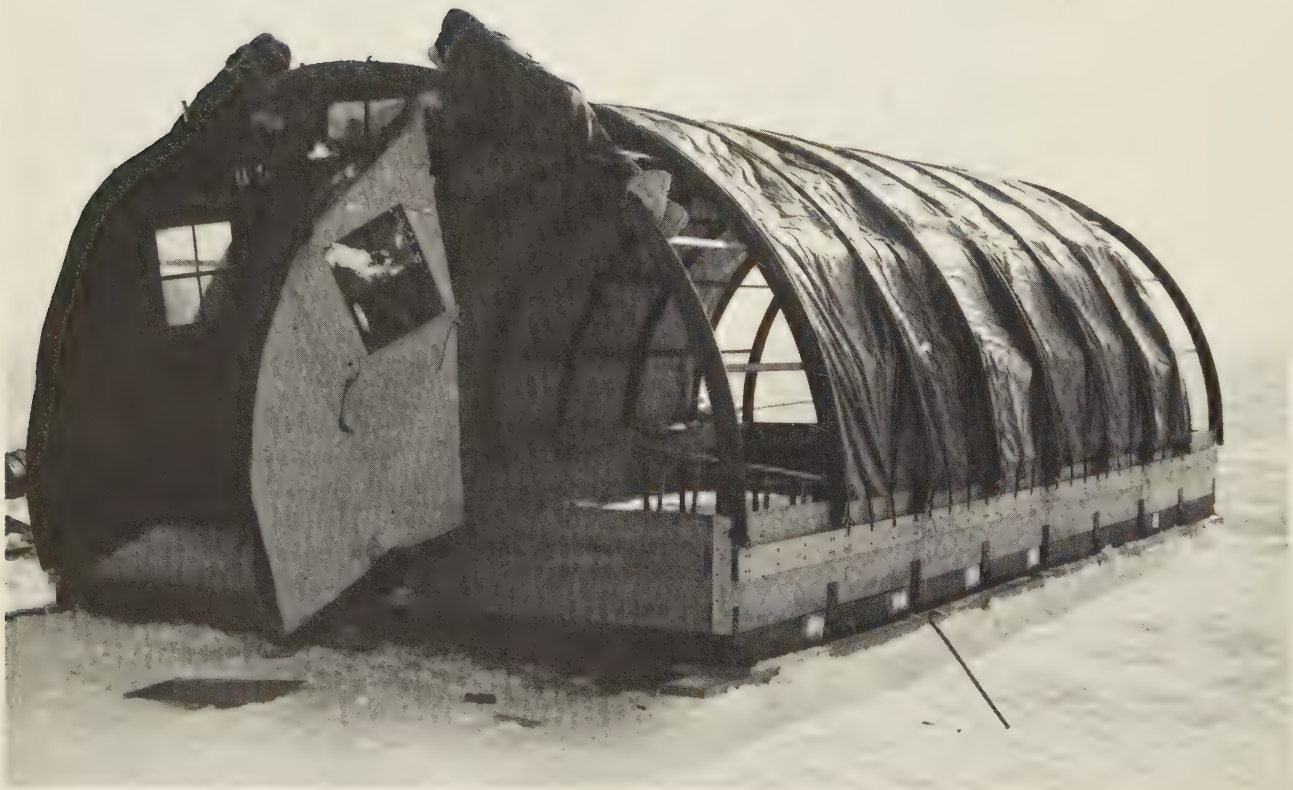
TOURING THE STATION, Dr. H. G. Stever, NSF director (1.) and Polar Programs director Joseph Fletcher look at building progress.

A new station rises next to the old

The Mobile Construction Battalion SEVENTY-ONE "Seabees" set to finishing work on the geodesic dome which will cover the main buildings of the New South Pole Station. The 164-foot diameter, 50-foot-high aluminum frame structure will house three two-story buildings, a science lab and living quarters, a galley, post office and meeting hall, and a communications center, store and library. Two tunnels will lead from the dome, one to a skylab and lounge and the other to a work and storage area. The new station is built about 1,700 feet "upstream" of the polar icecap drift, and is expected to be over the exact pole in eight years.

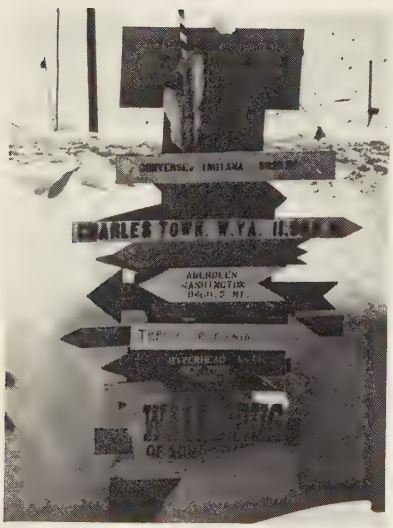
ONE HUNDRED BUILDERS need additional quarters (RIGHT) when visiting the South Pole, which normally houses between twenty and thirty.

CANVAS COVERED "JAMESWAY" structures (BELOW) are built to house crews which will be erecting the geodesic dome for the new station.



CONSTRUCTING A FRAMEWORK between buildings, Builder Second Class A.N. Thomas (BELOW) hammers in the chill polar air.

BRACING A DOORFRAME, Builder First Class R.A. Smith (ABOVE) assists in constructing one of the Jamesways at the new station site.



POINTING THE WAY, hometown signs of South Pole residents tell how far each of these towns is from the new geodesic dome.

FIGHTING THE ELEMENTS to finish the job on time, a Seabee construction man works on the framework of the 164-foot diameter dome which will house three of the new station's buildings.

Arising slowly, the dome begins to take shape

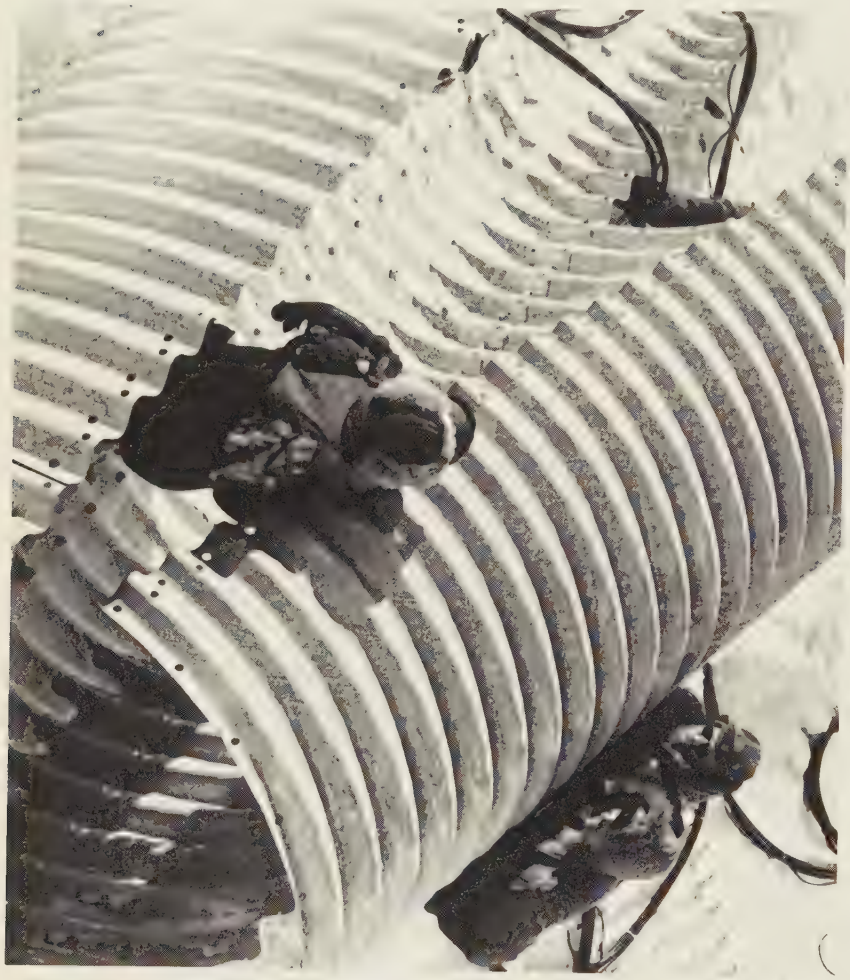
TESTING SNOW ACCUMULATION, this 1/10th scale model has been telling the engineers how prevailing polar winds will blow the snow which will eventually cover the new station.

THE PETER SNOW MILLER, heart of the polar construction force, is a Swiss-made machine capable of clearing a path 4 feet deep and 8 feet wide. It is used to dig trenchs and tunnels.

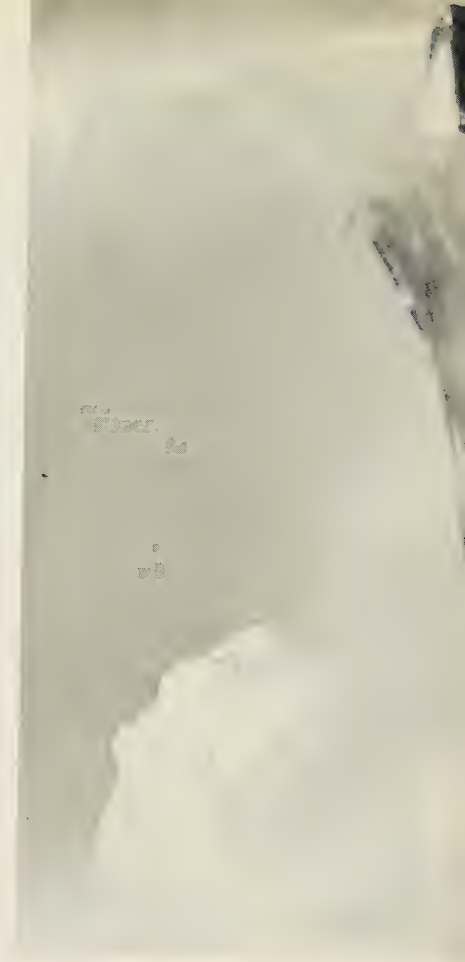
CLEARING A TRENCH of snow, a D-8 tractor helps prepare the foundation for the arch which will house most of the buildings not to be covered by the new dome.

By January the dome is well underway

COVERED WITH SNOW, Equipment Operator Third Class J. H. Forman sights along a narrow trench he is digging with a snow miller.



CORRUGATED TUBING forms a "utiladoor" tunnel which will house all the new station's pipes and electric cables.



EQUILATERAL TRIANGLES form one on another to create a pattern which repeats many times in creating the shape of the dome which will house the many scientific studies at the station.

Seabees tackle McMurdo construction

Navy Mobile Construction Battalion SEVENTY-ONE commanded by Commander W. E. Crosson, first deployed to Antarctica in the 1972 DEEP FREEZE season. In addition to the mammoth construction tasks at South Pole and Siple stations, the NMCB-71 Seabees tackled a variety of building jobs around McMurdo Station. Among the many jobs accomplished were the construction of a new communications transmitter building, and major improvements to the helicopter landing pad, including the addition of a fuel line.

DRIVING A SPIKE to secure a collar holding the helicopter pad fuel line, Builder Third Class Gerard Nault aids in building the line which will improve the fuel supply to the uptown facility.

SECURING THE PIPELINE carrying needed fuel to the aircraft at Williams Field, Builders Third Class T. J. Keen (L.) and E. Mroszak apply the proper tension to the lug bolts.

JOINING PIPE SECTIONS for plumbing in the new communications transmitter building, Utilitiesman Keith Wall works in cramped quarters while trying to complete work on the project.

CLEARING BLAST RUBBLE from the McMurdo Station helicopter landing pad, Equipment Operator Third Class Ralph Sheppard piles rocks for removal while driving a large bulldozer tractor.

Byrd Station is the Antarctic crossroads

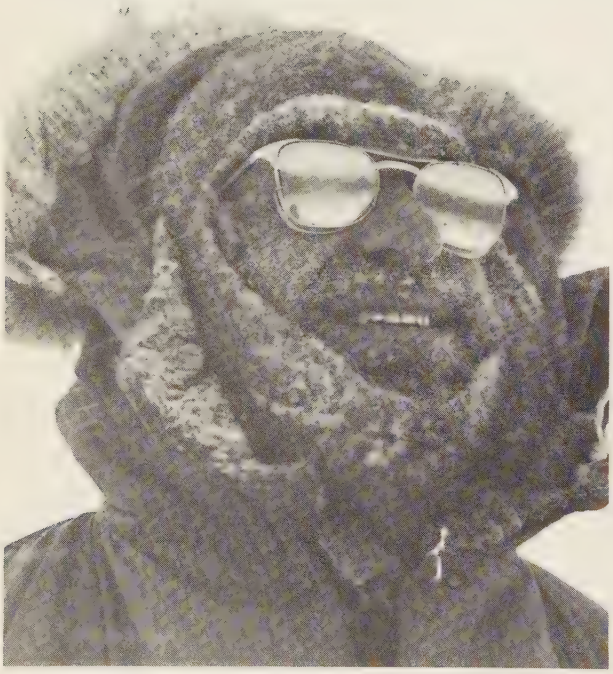
Byrd Station, formerly the site of two great Operation DEEP FREEZE scientific stations has now taken on a new importance as a refueling base for aircraft plying back and forth from McMurdo and Siple, and sometimes on to Pole station. Byrd plays another role, that of an alternate airfield which may sometimes be used when conditions at the Pole or McMurdo warrant. Byrd station was, until the 1971 season, an active scientific station buried under the snows of Marie Byrd Land. Built in 1961 by Navy Seabees the station was a group of prefabricated buildings placed in a maze of tunnels. National Science Foundation scientists were concerned with a variety of research disciplines. In 1972 the under-snow station was closed, and support personnel now live in a camp constructed on the surface. Snow drifting in the area is considerable.

AN EERIE GLOW is cast over the parking lot at Byrd Station, where one "hercules" refuels another for its return to McMurdo.

LEAVING A HERCULES, passengers await transport which will take them to their quarters at the new summer-only camp.

Siple Station studies have link to north

Magnetic lines of force enter the earth at various points in polar areas, making them ideal locations for the study of the magnetospheric region. A terminus of one of these lines is near the town of Roberval, Quebec, Canada. The other end of that same line was chosen as the construction site for Siple Station. Named for the late Dr. Paul Siple, who first came to Antarctica as a boy scout with Adm. Byrd in the late 1920s, the new scientific station is in Western Antarctica near the base of the Antarctic Peninsula. One unique feature of the new facility is that it is to be manned during the long winter by an all-civilian four man assembly rather than the usual mix of civilian and U.S. Navy support personnel. Data collected at Siple will be correlated with simultaneous findings made at Roberval, for detailed evaluation.



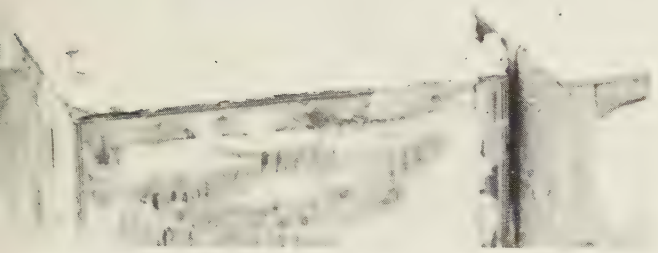
INSPECTING BUILDING progress, John P. Katsufrakis, Stanford University, doing magnetospheric research at Siple, finds the relentless Antarctic winds slow down the construction effort.

LIFE SUSTAINING FUEL is held in large rubber fuel bladders and marked by flags so the location will not be lost when the snow covers them. Without fuel, all operations come to a halt.

MAN HAULING is still sometimes the answer to Antarctic problems, as in the case of bringing drummed fuel to camp for heating. A banana sled serves as a primative transportation mode.

LIFTING CARGO from the ramp of a Navy "Hercules", (r.) a supply man prepares to take the needed supplies to the work site.

DIGGING OUT after a severe storm (ABOVE) scientists locate cargo, while (LEFT) Navy Seabees complete work on a station building.

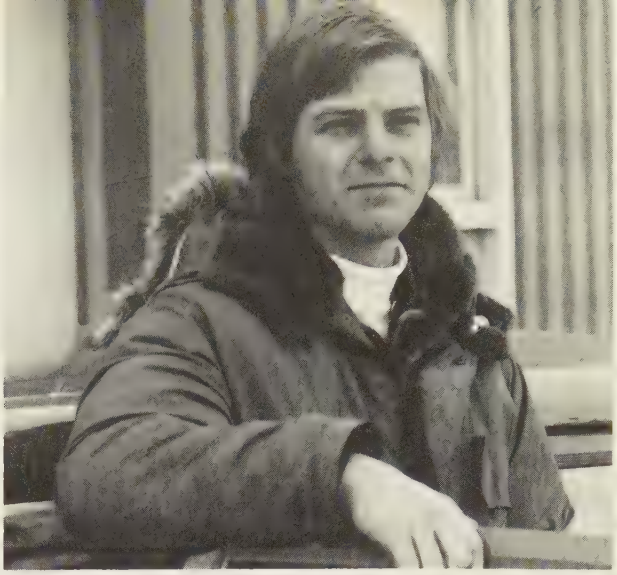


RAISING AN ANTENNA, scientist (RIGHT) make ready for their studies in the atmosphere, while (BELOW) a VXE-6 "Hercules" prepares to take off to return to McMurdo Station.

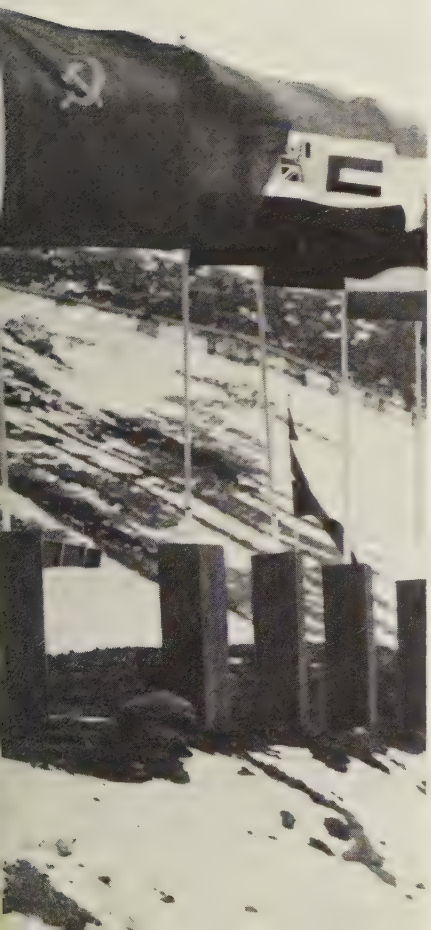
Management keeps NSF program on track

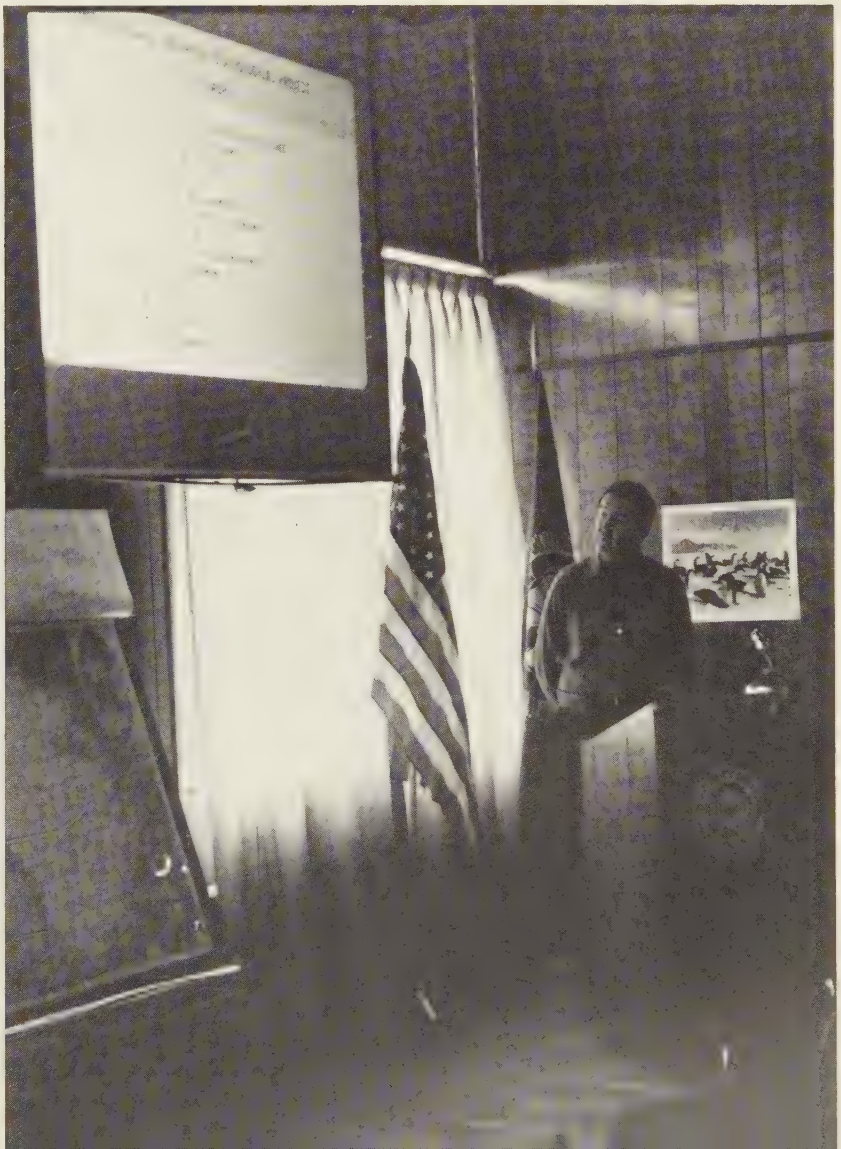
The National Science Foundation representative at McMurdo administers the over-all U.S. Antarctic program on the continent. The "Chalet" is the center for all research both in the McMurdo area and at outlying stations. Aiding the Foundation in the day-to-day operation is the firm of Holmes and Narver of Anaheim, California. Their team at McMurdo and a small detachment at Siple Station schedule flights for scientists and coordinate them with the Navy, while also managing the operation of laboratories and associated facilities.

CHECKING THE SCHEDULE, National Science Foundation Representative Dave Bresnahan works out the fine details which will provide the most economical approach to executing the necessary research.



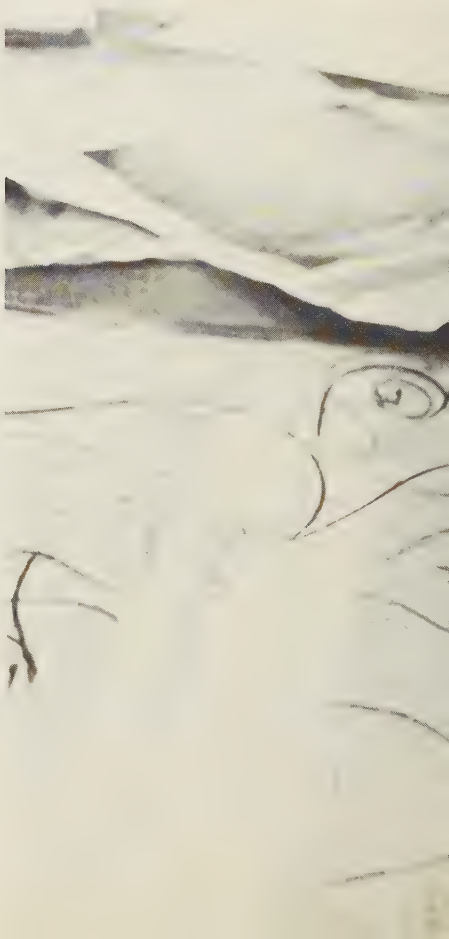
LOOKING OVER THE ROSS SEA, Hank Hershel, Holmes and Narver, awaits a returning aircraft while (BELOW) NSF Representative Ken Moulton briefs visitors on one of the many facets of the U.S. program.



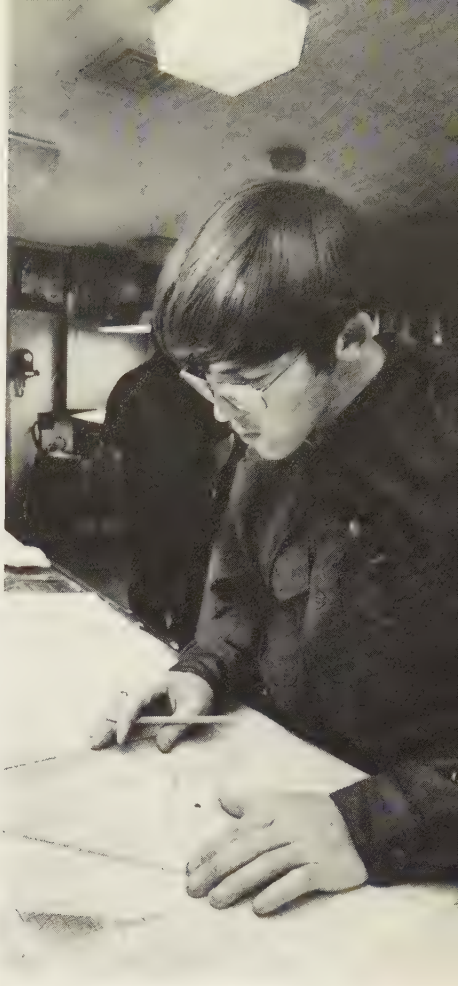


The weather is still the primary topic

The thing that makes Antarctic scientific exploration unique, of course, is the weather. It is the harshest and most unyielding climate on earth. The severity of it is measured in the extreme cold temperatures, nearly 30 degrees on the average less than that of the more moderate Arctic. More importantly, however, is the quest to learn the secret of timely and accurate predictions on which advance flight operation planning can be based. Antarctic weather records are available for only the years man has explored, and many more are needed before predictions can be based on these trends. Satellite transmissions make up for some of the lack of weather reporting stations, however, and are providing a valuable service in giving an accurate cloud picture on which detailed trends and forecasts may be based.



GETTING THE WORD on the flight-path weather, (L. TO R.) Brigadier General William Dietrich is briefed by Captain Fowler, Lieutenant Commander Martin Nemcosky - weather officer, and Lieutenant David Leib.



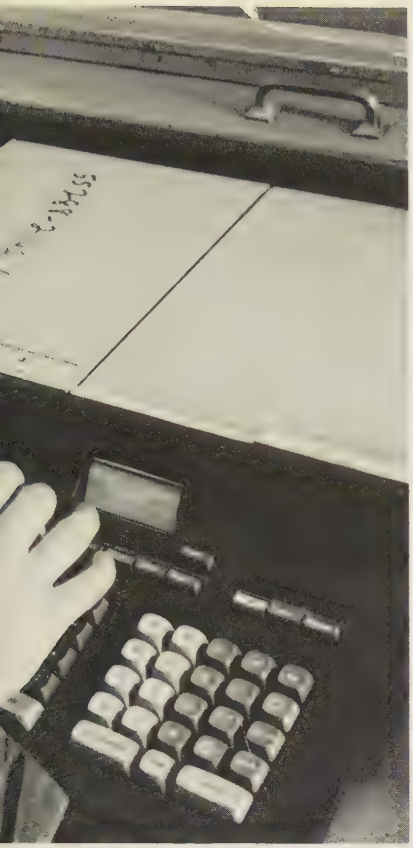
PLOTTING THE TREND of an upper air sounding chart, Airman James M. Kelly records the information from which the temperature, relative humidity and other data may be obtained.

AN OCCLUDED FRONT is traced over a map of Antarctica to obtain a surface analysis chart, which integrates outlying station reporting data with upper air and satellite observations.

PREPARING TO TRANSMIT a facsimile of the surface analysis chart, Aerographer's Mate Second Class Stephen McKenzie readies the machine which will send it to Christchuch, New Zealand.

STEADYING A RADIO transmitting balloon before launching it into the upper atmosphere to obtain data, Aerographer's Mate Third Class Charles Miller waits for the time signal.

New methods mean better forecasting



A MODERN COMPUTER takes the toil of manual mathematic calculation out of obtaining wind factors, Lieutenant Thomas Nelson learns as he programs the machine and in return is given wind data.

DECODING TELETYPE information from Australia, New Zealand and the Soviet Union's Molodezhnaya station, Aerographer's Mate second class Jeff Williams uses the data for a surface chart.

Lassiter Coast tests field party training

One of the toughest tests of man's ability to live and work in the Antarctic environment was experienced by five geologists doing a survey to complete the last link in the geologic knowledge of the Circumpacific Mountain Belt, along the Weddell Sea coastline. The four Americans and one Soviet exchange scientist were put in the field near the Ferguson Nunataks on the Lassiter Coast, to map the hundreds of square miles yet uncharted. The U.S. Geological Survey team operated from a centrally located Jamesway hut and spent most of the time camped in the open, using snowmobiles for transport, while collecting their data.

HEAVY WORK is done by Soviet Exchange scientist Dr. Eugene Kamenev of Leningrad (FRONT) and Dr. Karl S. Kellog of the University of Colorado, in sorting lumber for their shelter.

JAMESWAY ARCHES (LEFT) are carried by Dr. Kamenev to the building site where the five-man survey team will make their base camp. From here they will range over hundreds of square miles.

PREPARING TO SLEDGE cargo to the camp site, the members of the geological survey team haul the materials from the aircraft and check the sled. The supplies must last them four months.

A field camp finds everyone pitching in

OPERATING A GENERATOR (LEFT) which will provide power for lights and equipment, (L. TO R.) Dr. W. Vennum, Sonoma (Cal.) State College gets an assist from Electronics Technician B.V. McDermott.

ERECTING A SCOTT TENT (LOWER LEFT) which they will use in the field, and while building their basecamp Jamesway, Stephen Boyer, U. of Colorado and Dr. Peter Rowley, USGS, Denver, set pegs in place.

USING A SKI as a terminus for their antenna, Dr. Vennum and Dr. Kellog prepare to string the wire to establish communication. Contact must be made before they may be left in the field.

STRETCHING A LINE to hold the tent taut against the ever-present wind, Stephen Boyer helps erect the temporary living quarters.

UNRAVELING A LINE, Dr. Rowley (L.) works to secure the tent while other members of the party stow the cargo for their stay.

AWAITING THE WORD, Dr. Rowley, Petty Officer McDermott and aircraft commander (RIGHT) Commander John Dana stand by as task force commander, Captain Fowler establishes contact with Palmer Station.

Contact made, the party is left in the field

STANDING BY without shutting down her engines, the "Hercules" which brought the party to the area waits to return to McMurdo. The aircraft will return later in the season for a resupply mission.

Everybody's talking at 'em — they want every word

Probably one of the most valuable assets in life, and indeed in polar exploration and research, is information. Man wants to know about aircraft schedules, weather, construction plans, ice conditions, analysis of specimens, and a myriad of other things. In the U.S. program in Antarctica a premium is put on good communications. The task force system is part of the worldwide link which is ready at a moment's notice to pass the needed word. A system such as this, with its millions of dollars worth of highly complex equipment, must have equally skilled maintenance personnel. Like so many other facets of the unit, this is the rule rather than the exception. The transmitters and antennas are high on the hill overlooking McMurdo Station, and provide access to field parties as well as to stations on the continent and off.

HANGING PUNCHED TAPES, Radioman Second Class Al Bray (ABOVE) files them while Radioman Second Class Robert Dix prepares a taped message which will be sent at high speed by a transmitting machine.

SINGLE SIDE BAND radio (LEFT) plays a vital role in Antarctic communication, realizes the operator, Radioman First Class Dan Stephan.

RELAYING INFORMATION received from another Antarctic station, Radioman Second Class Jimmy Longstreth (RIGHT) prepares a message for the next station in the vast communications link.

Happiness is good and timely maintenance

OVERSEEING THE MAINTENANCE of the vast variety of communications equipment, Lieutenant Junior Grade Marcel Lonneman ponders a thought.

PREPARING TO RETURN a piece of needed equipment to working order is Electronics Technician Second Class Richard Petrytyl.

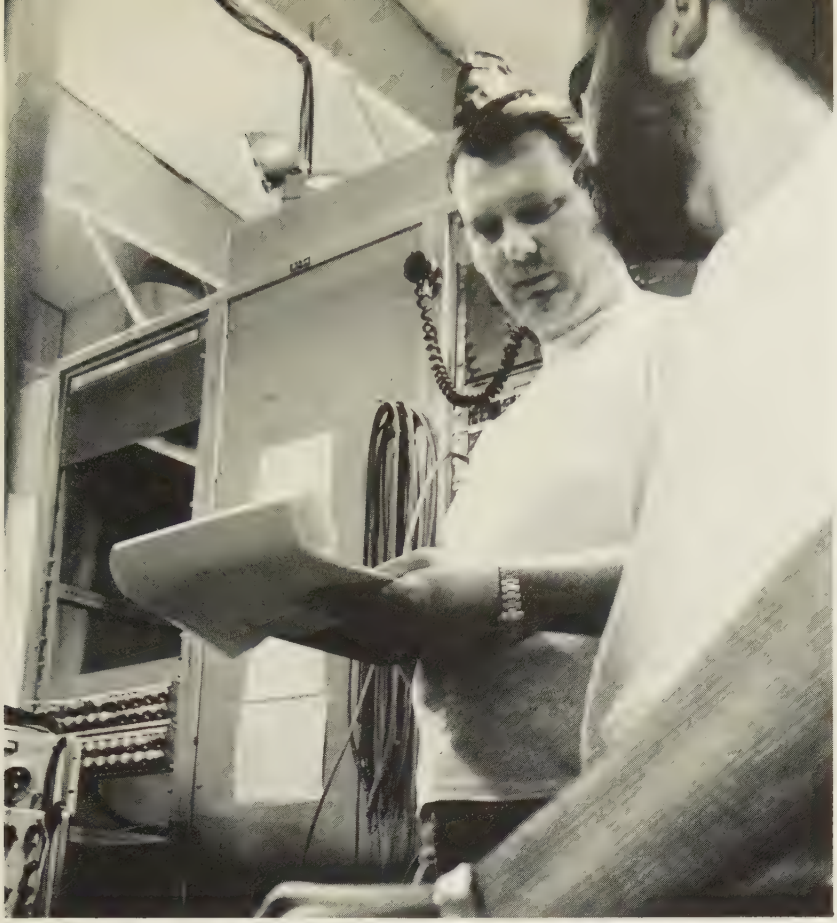
CHECKING FOR A SHORT in a radio receiver, Electronics technician third class Henry Rolin uses a multimeter to test each phase of the circuit until the malfunction is located for repair.

DISCUSSING A SCHEMATIC diagram in the FM maintenance shop, Electronics technician second class Paul Hamilton and Electronics Technician third class Richard Pulling ponder a plan for repair.

REPAIRING A CHASSIS on a field party radio transmitter, Electronics technician third class Bryan McDermott reworks it for reissue to one of the many scientific units working nearby.

COMPLETING REPAIRS, Electronics technician first class John Crawford (ABOVE) makes a piece of radio equipment available for service.

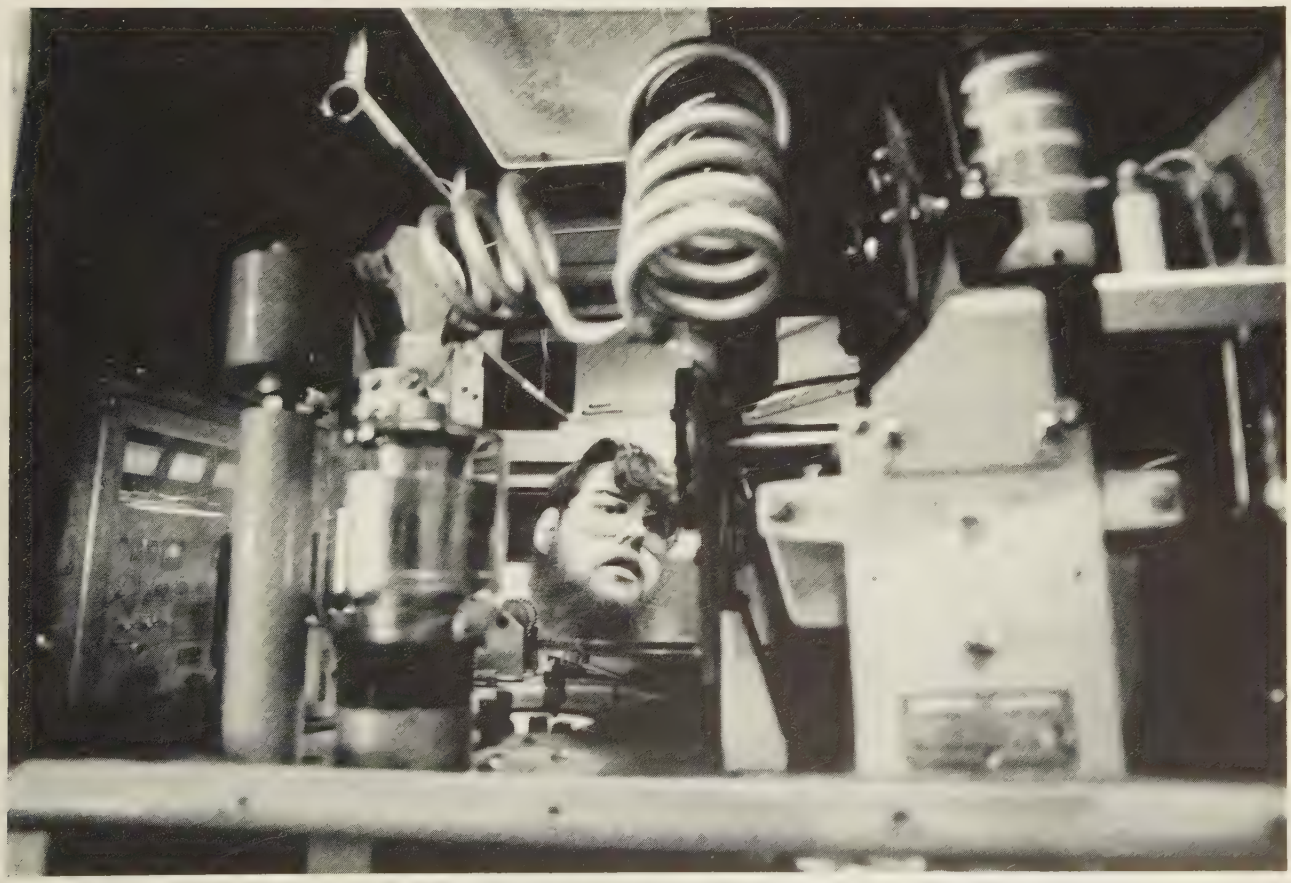
CHECKING FREQUENCY RECORDS in the calibration lab, Electronics technician first class David Peterson (RIGHT) notes degree of usage.



A good signal means a good team sending

DISCUSSING A PROBLEM, Electronics technician first class Jim Cross (L.) and Electronics technician second class Dave King work it out.

CLEANLINESS IN A TRANSMITTER is extremely important, so Electronics technician second class Dean Herrick (BELOW) keeps it spotless.



France tries overland trip to Russia's Vostok

As part of the 10-year International Antarctic Glaciological Project (IAPG) a 17-man French traverse party, led by noted scientist-explorer Paul Emile Victor, continued their study of the East Antarctic ice sheet. They were flown to a desolate snow-swept spot some 30 miles north of France's Dumont D'Urville station on the coast, where they again started for Russia's Vostok, high on the polar plateau. The party had planned to work on the second half of the two-year task of extracting ice cores and making gravity measurements and soundings along the 1,100-mile route, but extreme weather and mechanical failure forced them to return to their home base without reaching their goal. Navy pilots made airdrops of food, fuel and parts along the route.

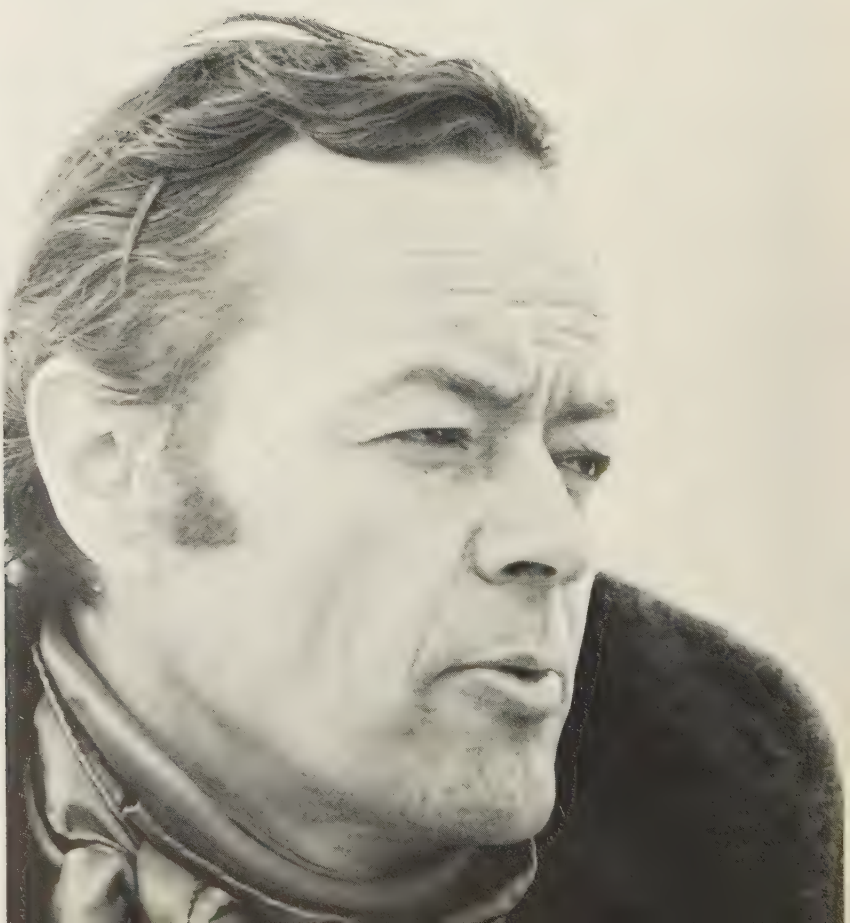
RELAXING WITH TEA at Scott Base, members of the French Polar Expedition prepare for their trek from Carrefour to Vostok.

INDICATING THE PROPOSED ROUTE, a member of the party (ABOVE) points out rough terrain expected during the traverse across the icecap.

HUDDLED TOGETHER for warmth, the members of the French party (ABOVE) prepare to leave on the flight which will put them in the field.

TONS OF SUPPLIES are loaded (BELOW) into a VXE-6 Hercules for the flight to Carrefour where the traverse will commence.

VXE-6 HERCULES 320 turns up with skis down for takeoff. The French traverse party, aboard the craft, is ready to begin the trip.

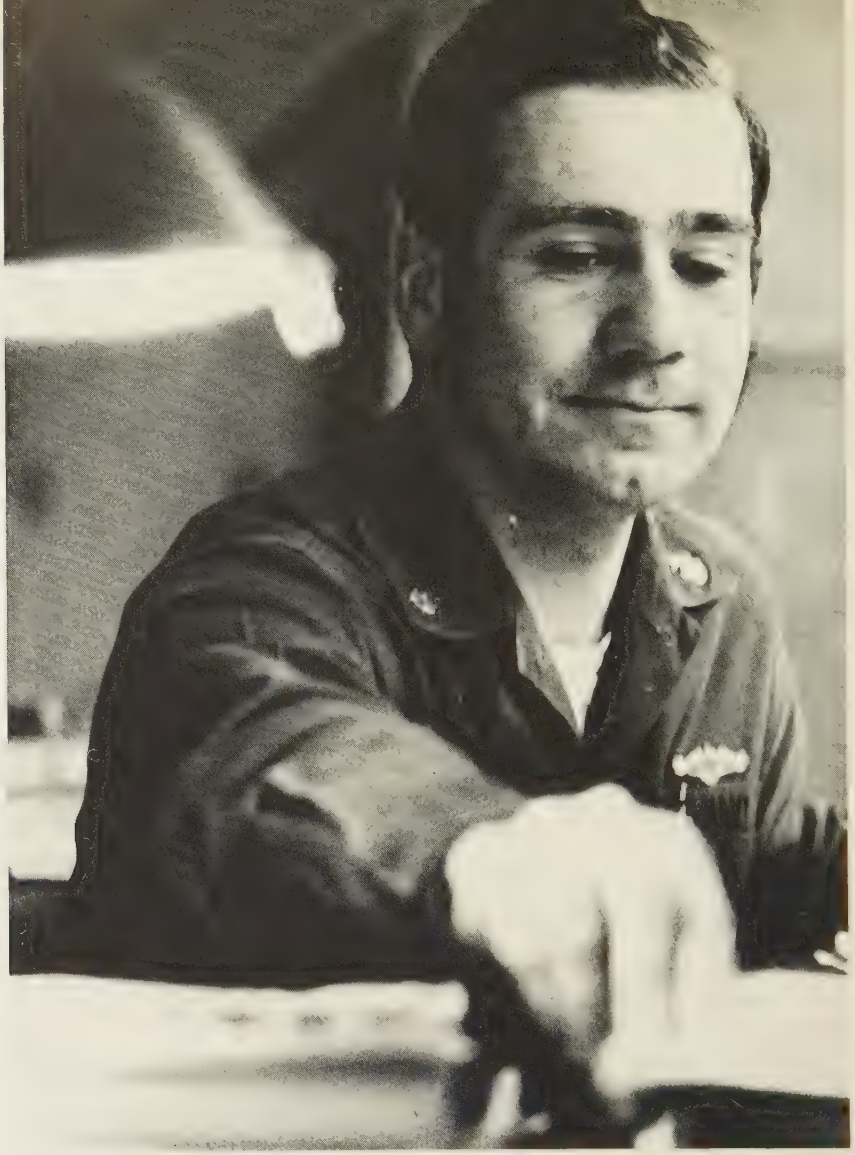


SURVEYING THE TASK AHEAD, Henri Wiget prepares to begin the process of unloading supplies and equipment, once in the field.

Ahead of them, a rough trip to Vostok

EXPEDITION LEADER, Paul Emile Victor (L.) talks to another member of the party before setting out for their destination at Vostok.

HEADING OFF ACROSS the ice to their vehicles (BELOW), the party starts the arduous overland attempt at reaching their goal.



CHECKING A STACK of supply forms, Chief Storekeeper Richard Zinsmeister prepares priorities for ordering the needed equipment.

SLINGING NEARLY SEVEN TONS of lumber over the side, a pier worker stands by to receive building material from the cargo ship USNS Pvt. John R. Towle at Elliott Quay in Winter Quarters Bay.

Stock up now, because McDonalds is a bit far

When you're out in the field in Antarctica, trying to collect geological specimens, it's thousands of miles to the nearest drug or hardware store for that little item you need. So you soon realize that logistics is the name of the game in the U.S. Navy support program on the southernmost continent. Food, fuel, building materials, clothing, equipment, and even entertainment motion pictures must be planned for and ordered months in advance to allow for transit of the world's longest supply pipeline, from Davisville, R.I. to the South Pole. If a scientist has it, a supply man brought it.

Items at hand mean happy customers

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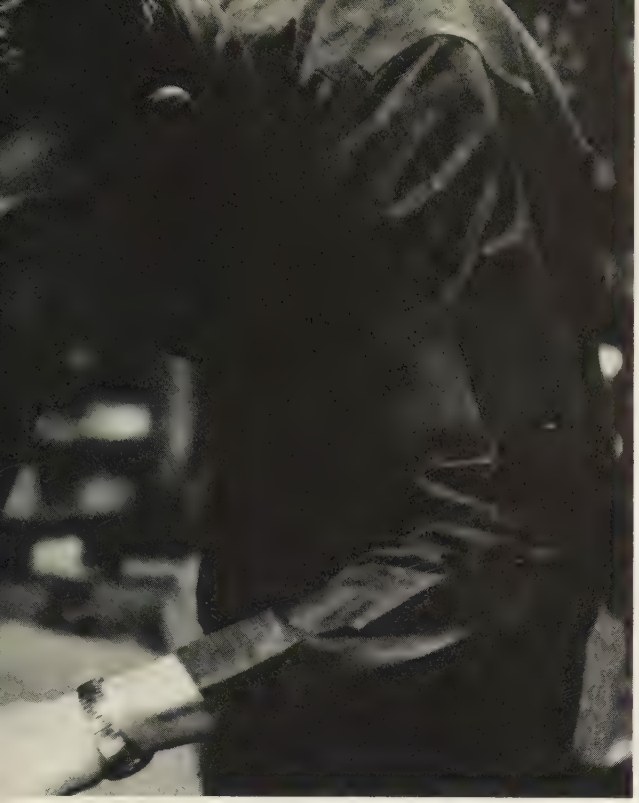


TRYING TO LOCATE a repair part on a microfilm file card, Storekeeper first class David Dubois (BELOW) checks the electronics references.

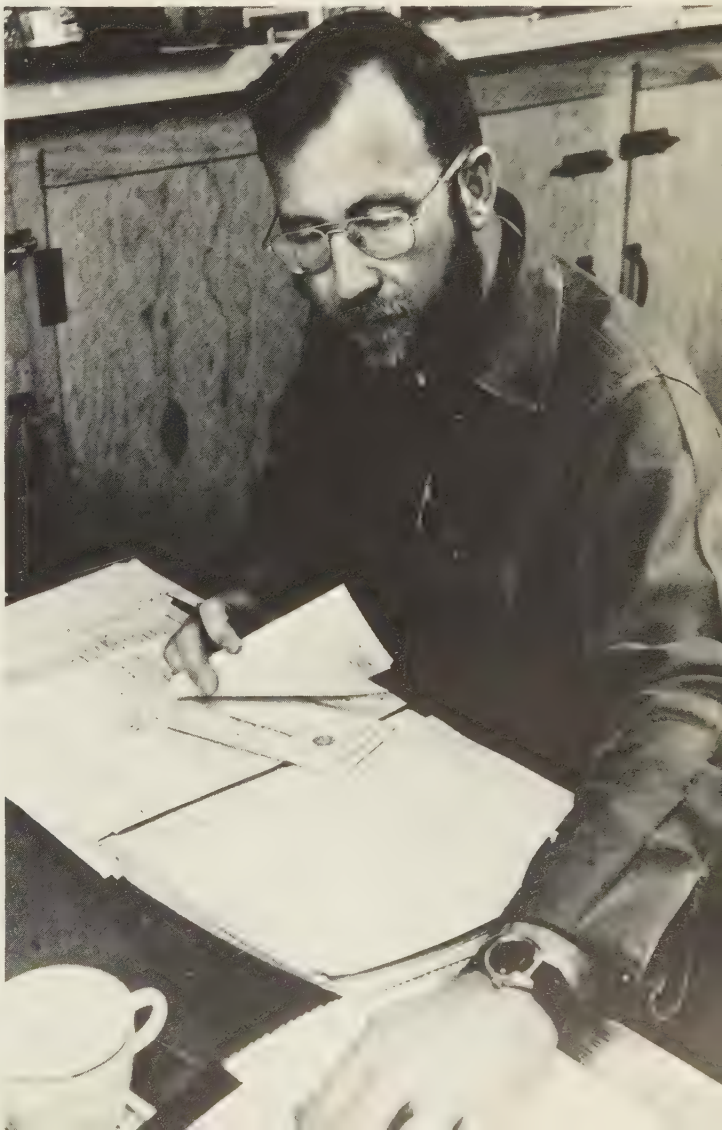
BRISK SALES IDENTIFY the beverage warehouse (BELOW) where thirsty scientists and Navymen can counteract the Antarctic's low humidity.

KEEPING IN GOOD TRIM, Utilitiesman second class Carl Pierce gets a haircut (LEFT) and the latest word from Ship's Serviceman Dave Cox.

Varied jobs all supply a big service

IN THE STATION LAUNDRY, Ship's Serviceman Wilson Hutchinson presses uniforms (LEFT) while (BELOW) Storekeeper first class John Dykema (R.) finds a pump part for Utilitiesman first class Ron Williams.

COMPUTING THE EFFECT of an allotment on future pay receipts, Disbursing clerk Dave McIntyre (ABOVE) uses a calculator, while (BELOW) Disbursing Clerk first class Harlie Hackemack verifies pay checks.



Helicopters provide lift in big construction job

Modern-day explorers and scientists have advantages not available to the men in Scott and Shackleton's day. One of these is the weather satellite which takes a picture of the cloud cover above a given area and which allows trained observers to predict their movement as weather systems. When McMurdo Station got a new version of the Automatic Picture Transmission (APT) satellite tracker in November 1972, a UH-1N helicopter was called upon to lift it to its perch on top of the administrative building. First, the mount was raised and then the corkscrew-like antenna itself was mounted into place. The system received two or three signals a day from passing satellites which cover most of Antarctica and the ocean area north to nearly 40°S. latitude. It defines the ice pack as well as cloud cover.

SECURING THE BASE to the roof, workmen (RIGHT) tighten the bolts which will insure survival in 120 MPH winds and 1/2" ice cover.

RECEIVING A SATALLITE PICTURE from the new antenna (RIGHT) Aerographer's Mate third class John R. Janek prepares to use it in forecasting.

BETTER THAN A CRANE, A UH-1N helicopter of VXE-6 (LEFT) carries the base for the new McMurdo weather satellite antenna.

LIKE A GIANT corkscrew, the antenna (ABOVE) rotates a complete 360° and can be raised 90° from horizontal. When installed, it received data from ESSA VIII and Nimbus IV weather observing satellites.

CONNECTING THE RIG to the massive crane (ABOVE) which will raise it upright, a workman attaches the hook to the drill rig frame.

TOWERING ABOVE MCMURDO, the drill rig (RIGHT) is being used to extract cores from beneath the surface of Ross Island.

THE FIRST CORES taken from beneath Ross Island (ABOVE AND BELOW) show the permafrost extending many feet below the surface, with layers of lava-origin soil separating the different strata.

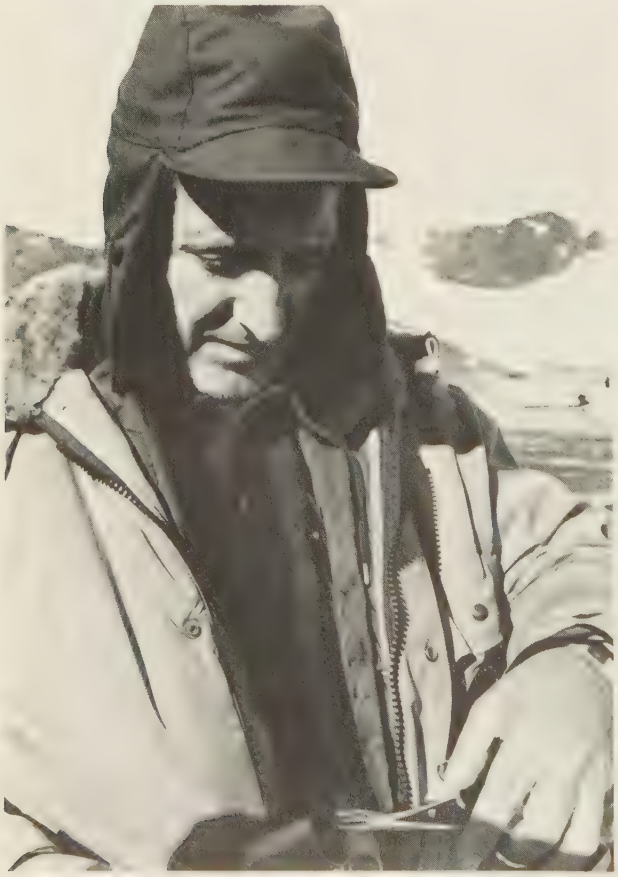
McMurdo drilling project finds hidden history

An effort was begun early in 1973 to determine the history of Ross Island by boring hundreds of feet through the surface to extract cores of sediment and rock. It is part of a four-year, multi-nation program which is studying the isotope geochemistry, paleontology, ground water and heat flow of the region. Dr. Lyle McGinnis, Northern Illinois University heads the U.S. contingent which is drilling with a 2 1/2 inch diamond bit drill. The first 200 meters of the planned 1,500 meter core weighed two tons and was comprised of 48 individual rock units and extensive permafrost. The cores will be forwarded to the Antarctic Core Facility at Florida State University for further study and distribution to other scientists interested in Antarctic studies. On site, looking at the probable and immediate environmental impact of the drilling is Dr. Roy Cameron, Jet Propulsion Lab, Calif. Institute of Technology, who is correlating air and soil samples for bacteria count.

TAKING AN AIR SAMPLE, Frank Morelli of the Jet Propulsion Laboratory, California Institute of Technology, (BELOW) adjusts an instrument.

PREPARING THE DETECTOR, Frank Morelli and Don Bailey, Virginia Institute of Technology (ABOVE) start an air sample procedure.

IN THE LAB, microorganisms taken from the air (BELOW) are studied to determine man's impact on the atmosphere above Antarctica.



IDENTIFYING THE SPECIES, Richard Honour (L.) U. of Calif. at Riverside, and Dr. Roy E. Cameron, check a text diagram to verify.

Air is sampled to record man's impact

CHECKING A CULTURE to note the growth of microorganisms taken from the air at the drill site, Frank Morelli sees their progress.

Glomar Challenger digs into ocean floor makeup

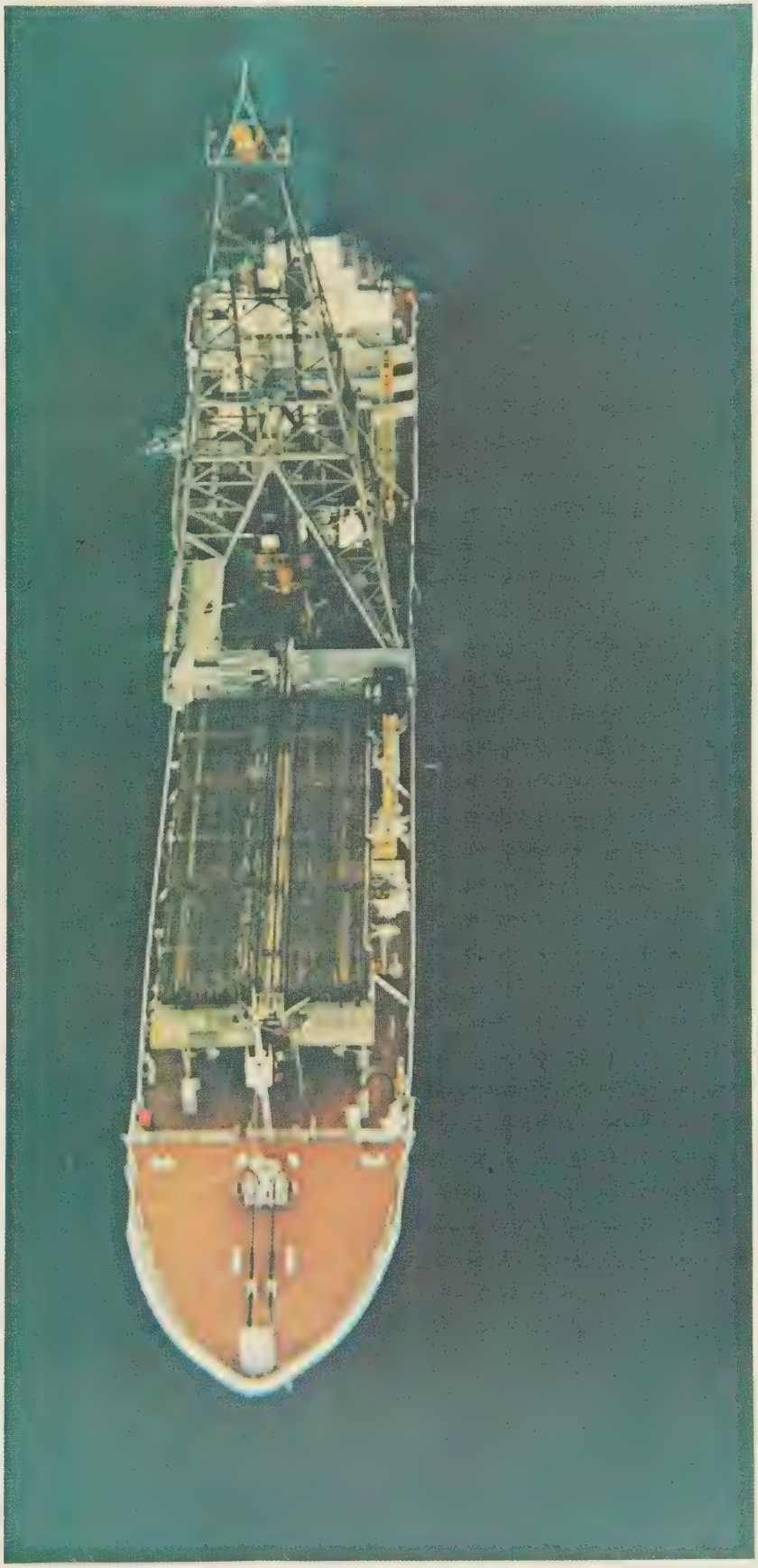
Another drilling project underway in Antarctica is the Deep Sea Drilling Project aboard the Glomar Challenger, a standard drilling ship modified to meet the requirements of the program. The plan calls for drilling and coring in up to 67 meters of water and to at least 1,000 meters below the ocean floor. The ship is equipped with a system which enables her to remain within a 30-meter radius of a given drill point, but work cannot be maintained while the ship is experiencing rolls greater than 5° or 3° forward pitch. In soft sediments at oceanic depths about 100 meters can be cored per day. Of this daily total, 50-75 feet will be recovered for study. Studies of sediment distribution will help define the history of the Antarctic bottom water formation, which is believed to have an influence on all ocean's circulations.

TESTING A CORE, Dr. Robert Wall, National Science Foundation, uses a pressure gauge to check the density of a sample from the ocean floor.

LIKE SOLID GOLD, a drill bit gleams in the sun after washing, (ABOVE) before being returned to the hole for another core extraction.

THE DEEP SEA DRILLING SHIP Glomar Challenger maintains station while probing beneath the ocean bottom for clues about its history.

ADDING A LENGTH OF PIPE to increase the drilling depth (BELOW) workmen line it up and secure it in place for further probing beneath the sea.



EXTRACTING A CORE from the great length of pipe it must travel (LEFT) to reach the top, trapped water pours over the deck.

TWO LENGTHS OF CORE taken from the Ross Sea area (RIGHT) tell scientists many things about the history of the ocean bottom there.

A LAPIDARY WHEEL is used to make a core section translucent (RIGHT) to enable scientists to study the granular structure more easily.

IN THE PALEONTOLOGY LAB, Trudy Wood dissolves core particles for qualitative studies, to determine the makeup of the sample.

In the lab, cores are tested for composition

CATALOGING CORE SAMPLES are Dr. Arthur B. Ford, U. S. Dept. of the Interior and Dr. Elizabeth Kemp of Florida State University.

Scientists take to ship to probe seal population

Aboard USCGC Burton Island (WAGB-293) Dr. Albert W. Erikson, University of Idaho, headed a five-man party conducting a survey on the population of Antarctic seals. Emphasis was on breeding, biology, productivity, population composition, and affinities, for all species encountered. Blood was collected to determine racial affinities, by electrophoresis and karyotyping. Additional investigations were made to determine the side effects of various drugs on the different species of seals, with the tests monitored via body function telemetry from aboard ship. Great use was made of Coast Guard helicopters in landing on small ice floes to make blood tests on seals and to collect selected ones for transport back to the icebreaker. Cargo slings were used, and seals were carried underneath the aircraft for landing on the ship's flight deck.

SHOWING ITS IMPLEMENTS, a Crabeater Seal (ABOVE) records its disgust at the unwanted attention being shown by Dr. Erikson and his assistants.

COLLECTING SPECIMENS to add to those from his McMurdo studies, Dr. William Felts marks a bag for identification.

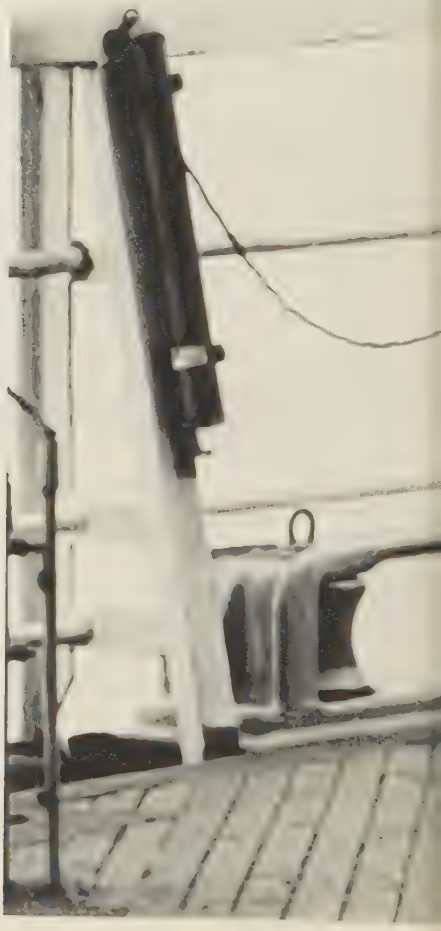
CALLING IN A HELO to carry a seal back to the ship (BELOW) a research assistant prepares to give the pilot the signal to lift off.

PUSHING THROUGH THE ICE of the Ross Sea, USCGC Burton Island (WAGB-283) (ABOVE) doubles as a platform for conducting science operations.

MEASURING A SEAL to correlate size with age and weight, Dr. Erikson (BELOW) studies population distribution and composition.

WEDDELL SEAL TRACKS across the snow (LEFT) betray a nearby hole through the ice which the mammals use for access to the sun and air.

FRAMED BY THE SHIP'S RAIL, a Burton Island helicopter (BELOW) returns to the ship with a seal selected for study in the laboratory.



Burton Island
helo gives
seals a lift

Icebreakers lead way for thin-skinned vessels

The first ships to be sighted by sailors and scientists at McMurdo Station each year are the spoonhulled icebreakers. Normal years find from 10-20 miles of thick ice formed between the cargo unloading area in Winter Quarters Bay and open water somewhere near the huts of Shackleton and Scott at Capes Royds and Evans. The sometimes seven-feet-thick ice must be broken and a channel formed so the thinner-skinned cargo ships may arrive to disgourge their supplies. This cargo accounts for more than 95% of all supplies reaching the U.S. program in Antarctica each year. USCGC Northwind spent most of the season after the initial breakthrough to McMurdo, in clearing the broken ice from the channel, and in keeping it open and unfrozen for later arriving vessels.

LIFTING CARGO OFF THE DECK of the USCGC Northwind (WAGB-282) (BELOW) a UH-1N helicopter ferries goods to Marble Point near the dry valleys.

LEADING A THIN-SKINNED cargo ship, USCGC Northwind (WAGB-282) guides it through the broken ice to their destination at McMurdo Station.

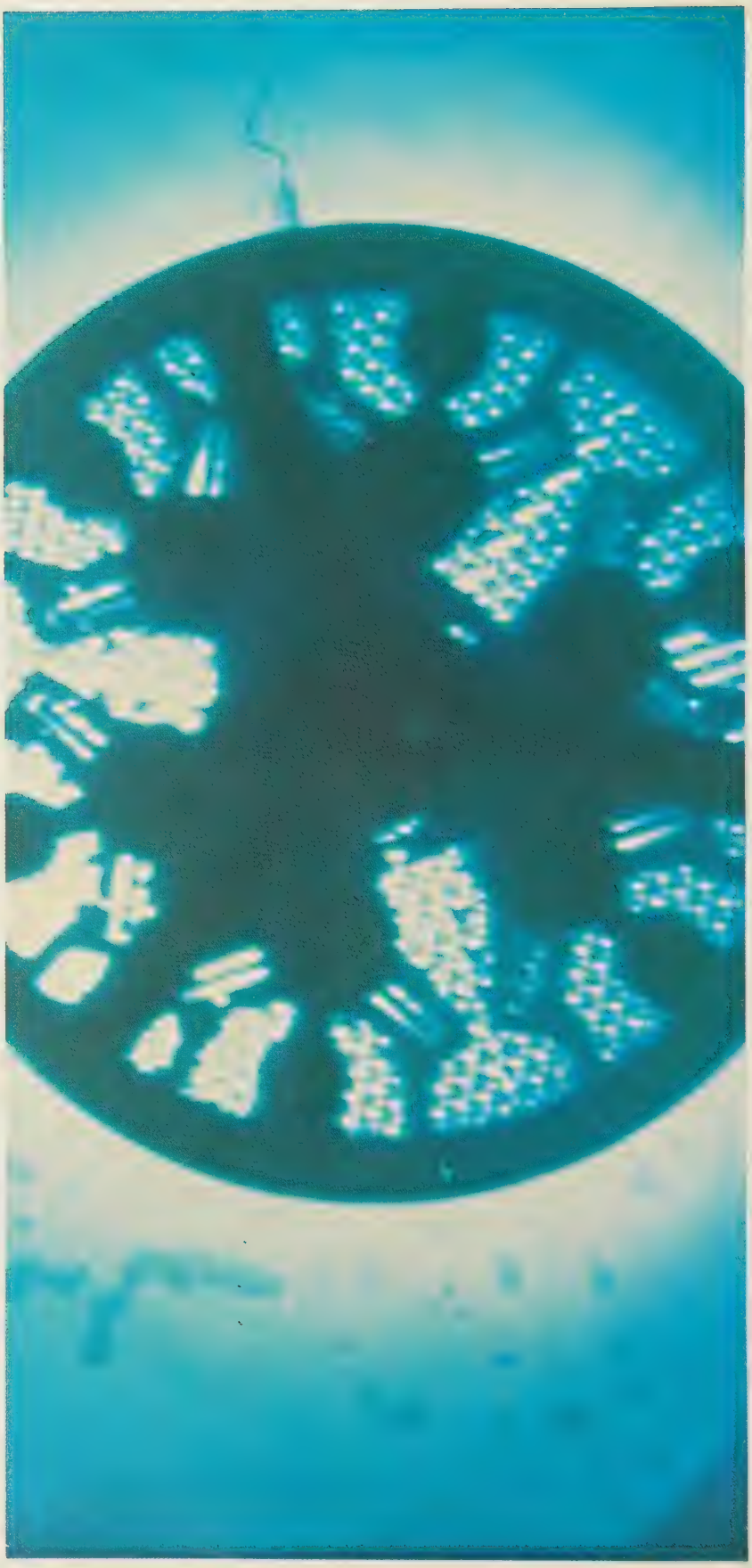
BREAKING THE CHANNEL in tandem, Northwind clears the broken ice (BELOW) while another breaker lengthens the distance.

PUSHING THROUGH the icepack under the watchful eye of USCGC Northwind crewmen (LEFT) USNS Mirfak (T-AK-271) approaches McMurdo Station.

Northwind crewmen see varied sights on McMurdo duty

DISTURBED BY APPROACHING SHIPS, groups of penguins (BELOW) seals, and even an occasional killer whale can be seen in the channel.

EASING INTO WINTER QUARTERS BAY, USNS Towle (T-AK-240) (LEFT) is aided in docking by USCGC Northwind, after a long voyage from the U. S.

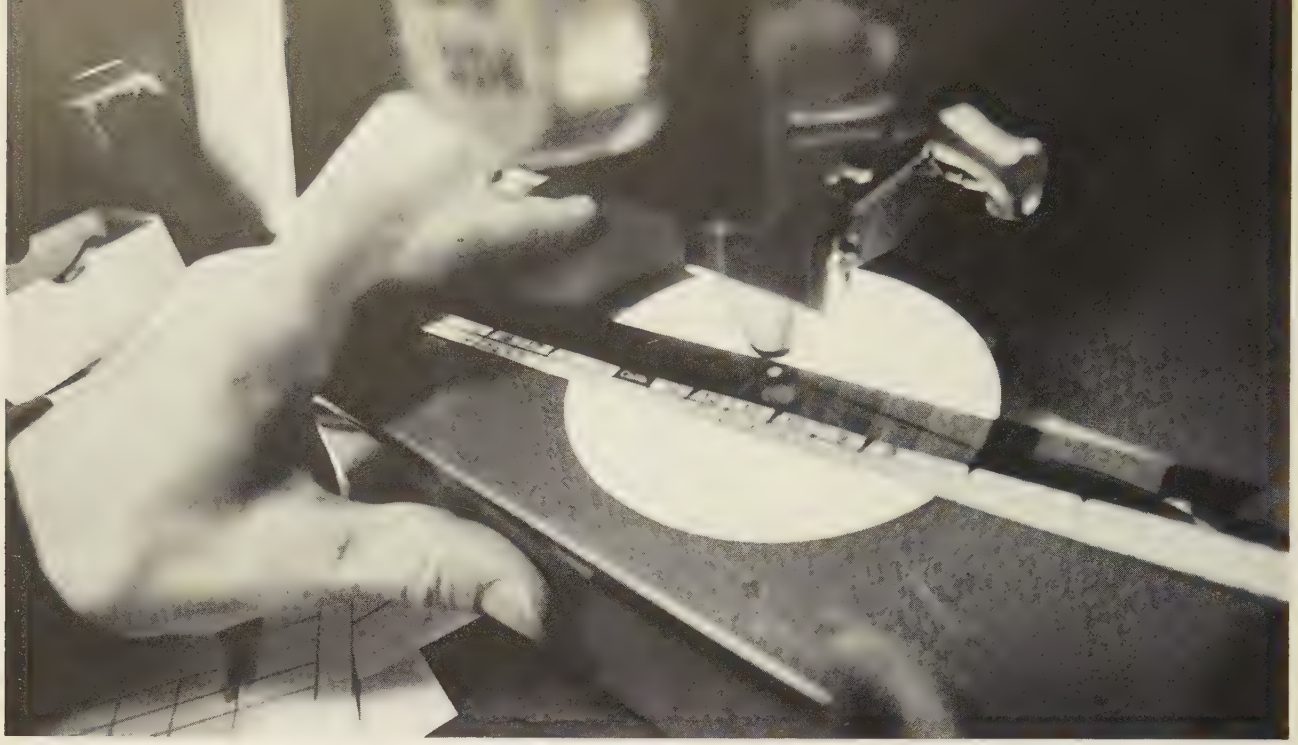


EMITTING A BLUE GLOW, the atomic core of the PM3A gives off heat to make the steam which will be converted to electrical power and 14,400 gallons of fresh water daily.

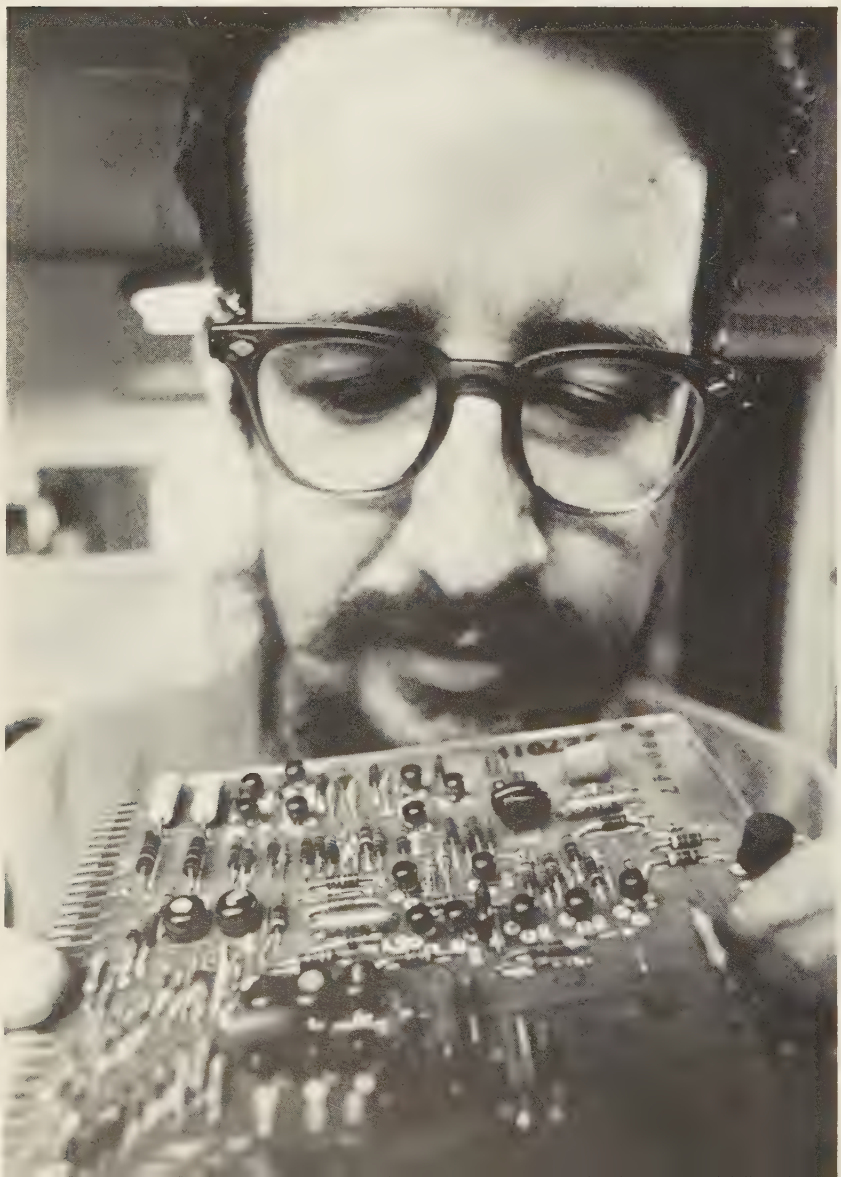
Nuclear power provides a source of energy

The year 1962 saw nuclear power come into use at McMurdo Station as the primary source of electrical power. The PM3A - for portable, medium, third in type, and field model rather than prototype - is a 1,500 kilowatt hour installation. It is also harnessed to provide power for operation of the water distillation plant, making 14,400 gal./daily. The PM3A uses pressurized water which is continuously circulated under pressure past the reactor core, where it is heated, and through a vessel called the steam generator. There it gives up its heat to create steam in the second loop. The secondary system is routed through the main turbine where the heat from the steam is converted into electrical power. Stringent safety measures are practiced, and double checks on procedures are the rule. The plant operators from the Navy's nuclear program are among the best-trained in the world.

A MAZE OF DIALS and controls marks the console of the plant. The multitude of instrumentation is designed to monitor the reactor's performance and state, and will keep the operator readily informed.



READING FILM to determine radiation exposure on an individual, a health physicist (ABOVE) checks to insure a safe level.



Maintenance is programmed at regular intervals

GRINDING A PLATE before welding, Steelworker Third Class Donnie Rodgers prepares a good surface to accept the bond.

ARMY SPECIALIST Robert Carr checks an electronics circuit board as part of a continuing program of preventive maintenance.

Safety monitors guarantee a good product

LEAVING THE REACTOR spaces (LEFT) a maintenance man checks the level of surface radiation on his hands and shoes.

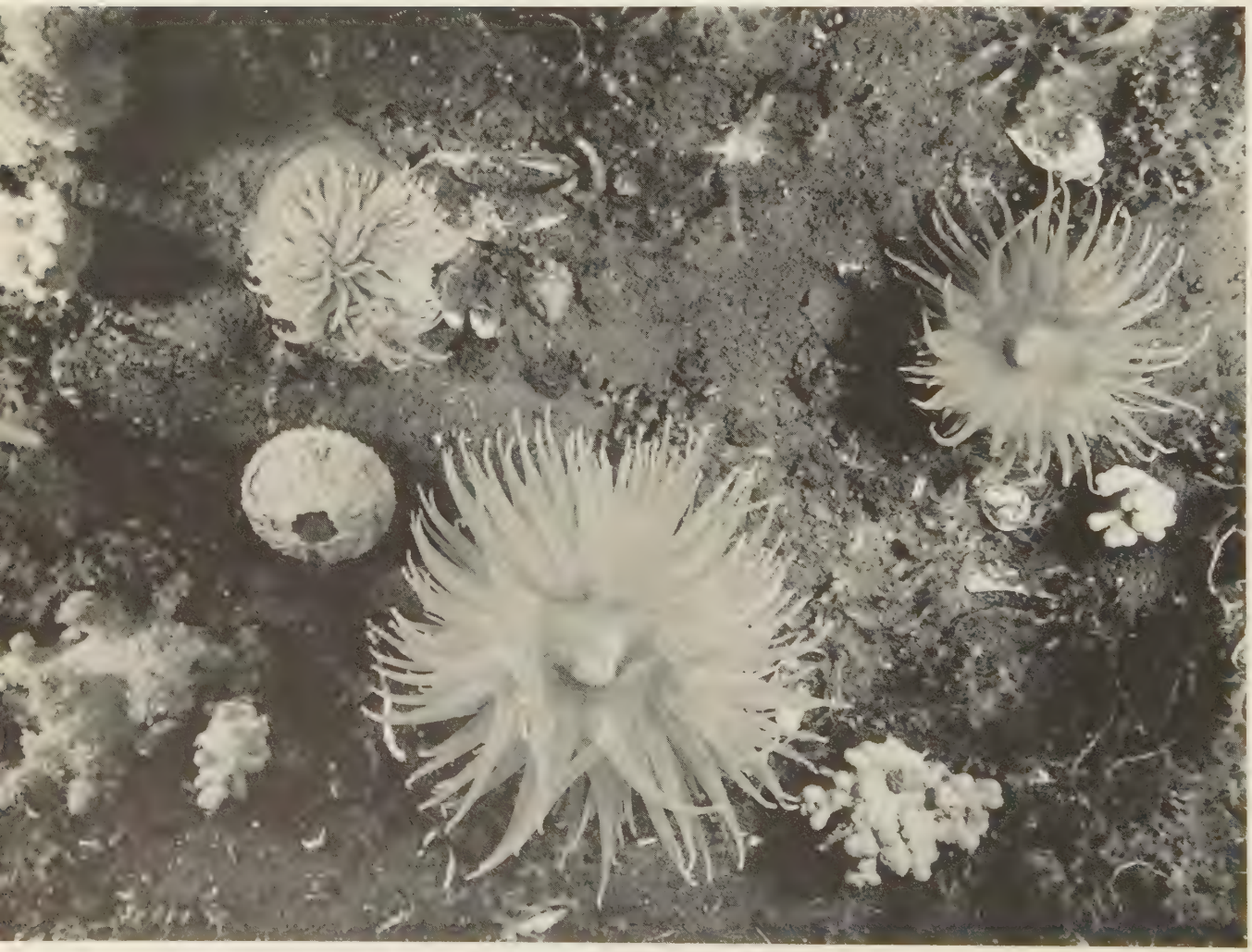
CHECKING THE radiation level of water before it is released to the atmosphere (BELOW), a health physicist notes a safe reading in the process of maintaining stringent controls for safety.

THE REACTOR containment vessel looms large behind Army Specialist Dudley Wells, III, as he relays plant operational readings from the primary building while preparing to inspect the reactor.

ON THE BOTTOM of the reactor containment vessel, a workman is standing on the pressure vessel cover, while the men above monitor the work being accomplished in inspecting the facility.

Antarctic waters yield secrets to biologists

One of the more spinechilling forms of research being conducted by the National Science Foundation in Antarctica, is the frigid waters surrounding the continent. Bruce Belman, conducting studies for Stanford University on the respiratory rates, biochemical and tissue structure of antarctic sea urchins and sea stars, slips through a hole in the 6 1/2 foot-thick ice to search the bottom of McMurdo Sound for specimens which will be carried back to the station for study. Access through the ice is obtained by using the hole cored for scientists conducting freezing resistance studies on fish.



SUITING UP, Bruce Belman prepares to dive into the -1.9°C. antarctic water to search for specimens for study.

TIGHTENING SCUBA GEAR, Corpsman W. Morton assists Belman in his preparation. A fish house is the site for launching the dive.

AWAITING HIS DIVE, Belman sits on the edge of the platform (RIGHT) surrounding the access hole. Because of the extreme cold, the dives are relatively short in time and distance.

BENEATH THE SEA, all manner of plant and animal life await the diver (LEFT). The familiar "sea egg" can be seen in the right-central part of the picture, resting on the bottom.

. . . "It's not the cold, it's the numbness"

SPRAYING SALT WATER about, Belman enters the water. He will collect specimens which will be taken back to the Eklund Biological Center for study, and further shipment to the United States.

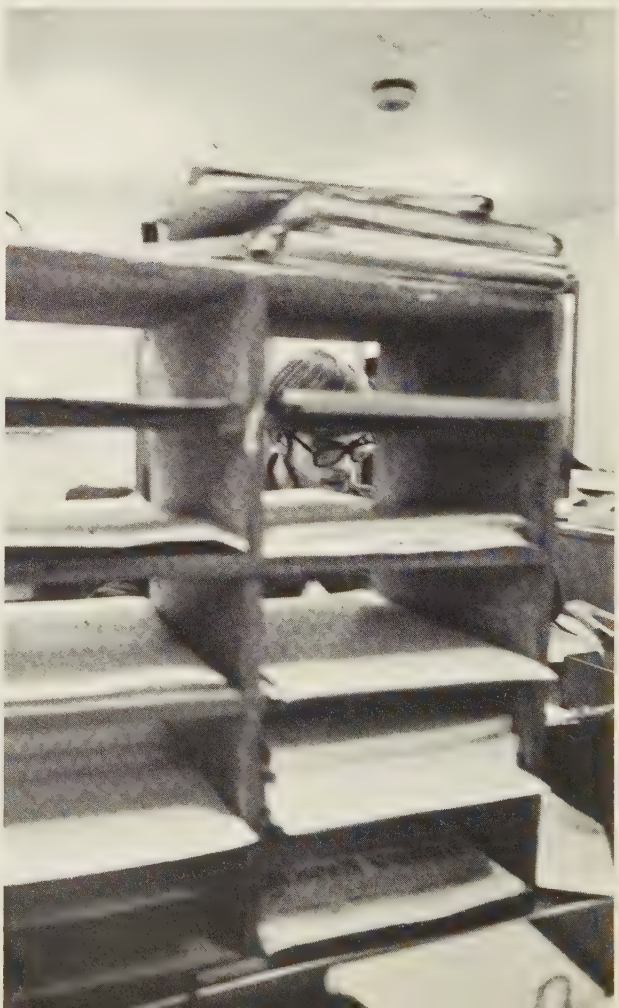
WAITING ABOVE, Belman's diving partner, David Checkley, sits on the edge, preparing to descend. Checkley is engaged with other scientists in a different study, but dives with Belman for safety.

A LARGE BAG holds Belman's findings for study. He is carrying a special underwater camera for photographing the specimen's habitat, a record of which will be useful in his research.

Their good work is a matter of record

The administration of a task force spread over hundreds of thousands of miles of the earth's surface is a thought which would boggle the mind of most persons, but for the DEEP FREEZE administrators it's an everyday task. With personnel transferring in and out throughout the year, and the unique cycle of Antarctic duty, training must be accomplished, leave credited, allotments started, records reviewed, and literally a million other things attended to on a constant basis. In addition to records, changes must be noted and implemented in regulations and practices which are Navywide and not unique to the Antarctic orientation of the command. Counseling plays an important part in a man's Navy career, and is an integral part of the service given by this team of administrative specialists.

INSPECTING A TYPEWRITER, Chief Warrant Officer Art Hughes declares it ready for duty.



VERIFYING SERVICE RECORD information, Personnelman Dave Harrison (ABOVE) maintains a close check to assure accuracy.

THROUGH A MAZE of paperwork, Personnelman Steve Harner (LEFT) is seen typing a letter requesting a Navy specialty school quota.

MAINTAINING CONTROL of action correspondence, Yeoman Third Class Doug McGowan (RIGHT) routes it to the necessary people.

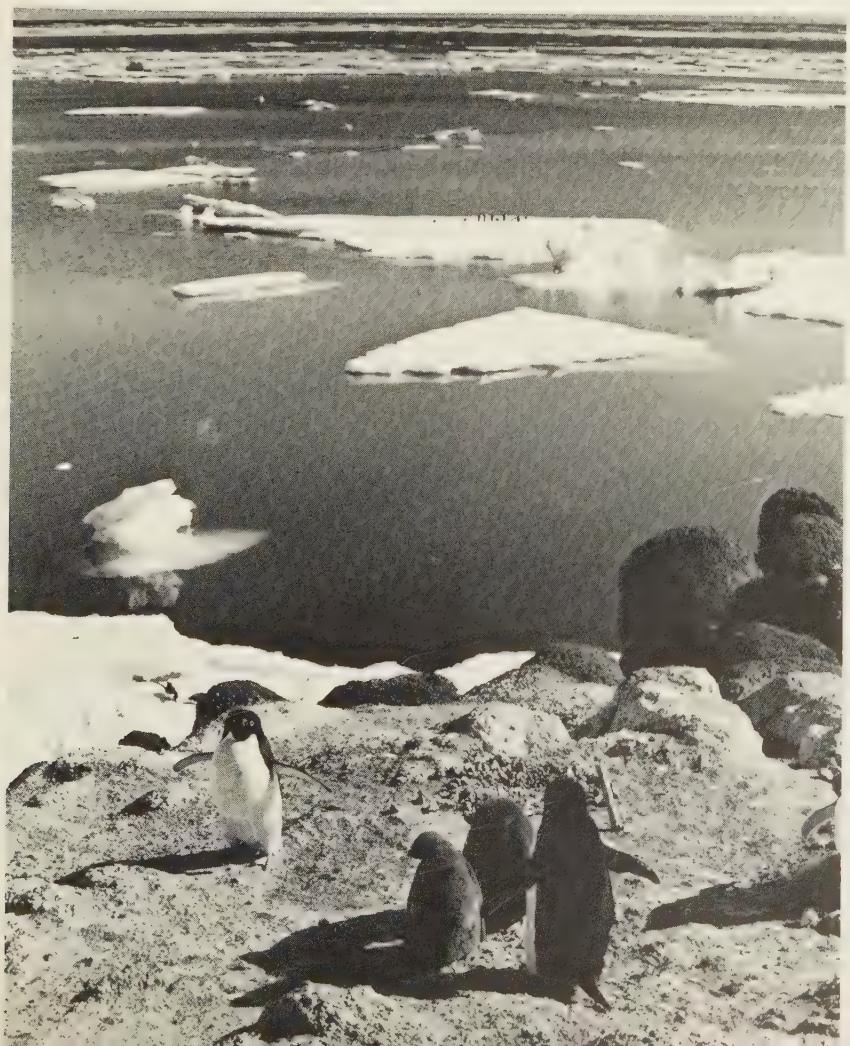
A variety of wildlife gives scope for study

No land animals are native to the Antarctic. None of the bears and foxes, so prevalent to the Arctic, are found in the colder and more barren South. Yet, the skys and seas surrounding the vast continent abound with life, and several animals have been temporarily introduced such as the early explorers ponies, and the present-day use of dogs by the New Zealanders. The soaring Skua and the Weddell seal are common sights at coastal stations, and at times a passing penguin will provide an opportunity for photography, as will the sighting of a group of lively killer whales.

WEDDELL SEAL babies (L.) have the facility of surviving and thriving after being born in the early austral spring in temperatures usually ranging far below zero degrees fahrenheit.

A HASTY EXIT from their swimming hole (R.) means the presence of a leopard seal or killer whale for these Adelie penguins. An Adelie can actually "pop" upright from the water onto land.

LEAVING THE ROOKERY, a group of Adelie penguins (R.) heads for waters off Cape Royds to swim and forage for food. They mainly feed on a small shrimplike organism called "krill".

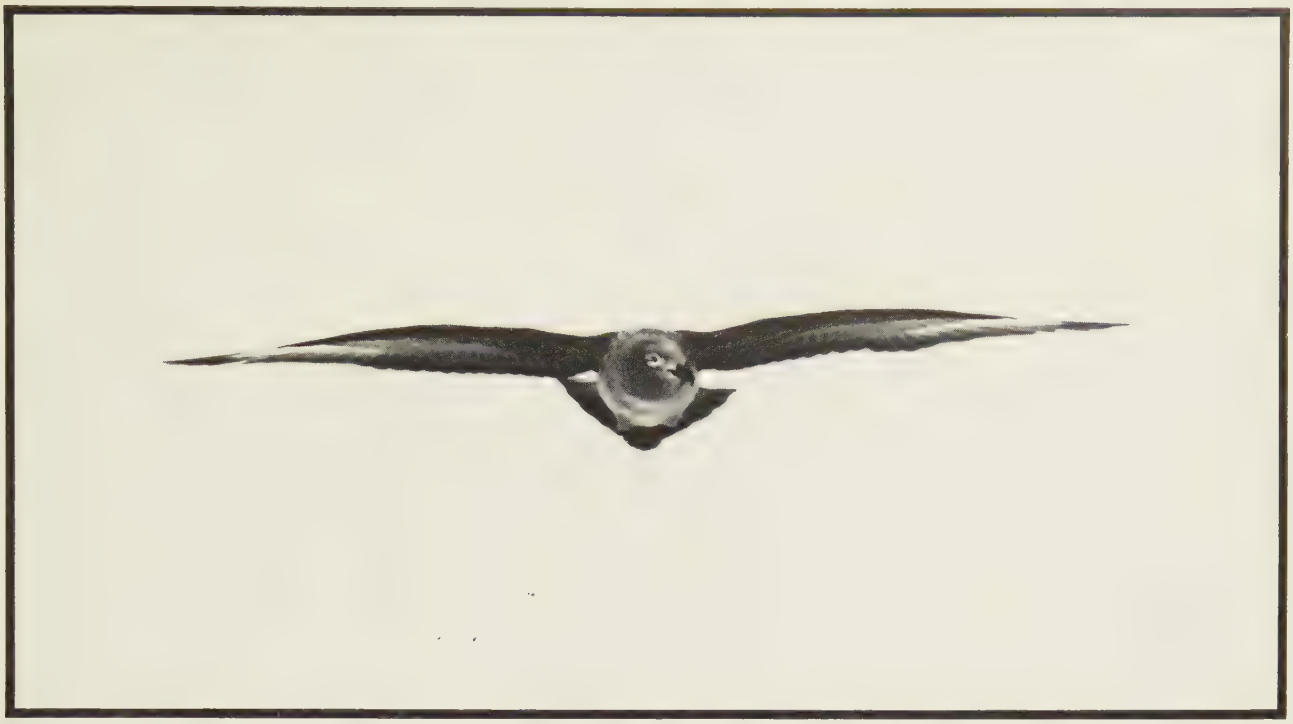


SCOTT BASE DOG HANDLER John Bitters prepares to make his team of sled dogs ready for a field party trip. The dogs are used for both transport and recreation at the camp.

The "eagle" of the Antarctic

A LONE SKUA rests from his daily routine of scavenging about for food. While he will eat just about anything, he shows a marked preference for Adlie penguin eggs.

A COAST WATCHER, mainly, the Skua has been known to venture and nest as far inland as 150 miles.



MIGRATING NORTH, away from the approaching winter, the Skua soars high over the ice pack on his journey.

APTLY NICKNAMED the "eagle of the Antarctic", the pronounced beak of the Skua resembles that of the larger bird of prey.

MATURE EMPEROR PENGUINS mill about in the gathering darkness of an approaching storm. Other penguins forage in the water for food which will sustain them while they tend to their young.

Emperors without a throne

STANDING THREE FEET TALL, an average Emperor penguin will weigh about 60 pounds, and one blow from his powerful flippers could break a man's arm.

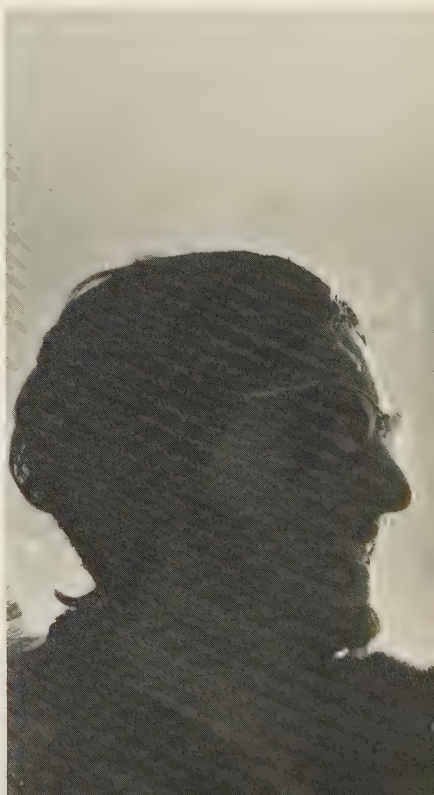
A MATED PAIR of Emperor penguins stand outlined against the ice. During the winter the mother will lay a single egg, and the father will protect it from the cold with his body fat.

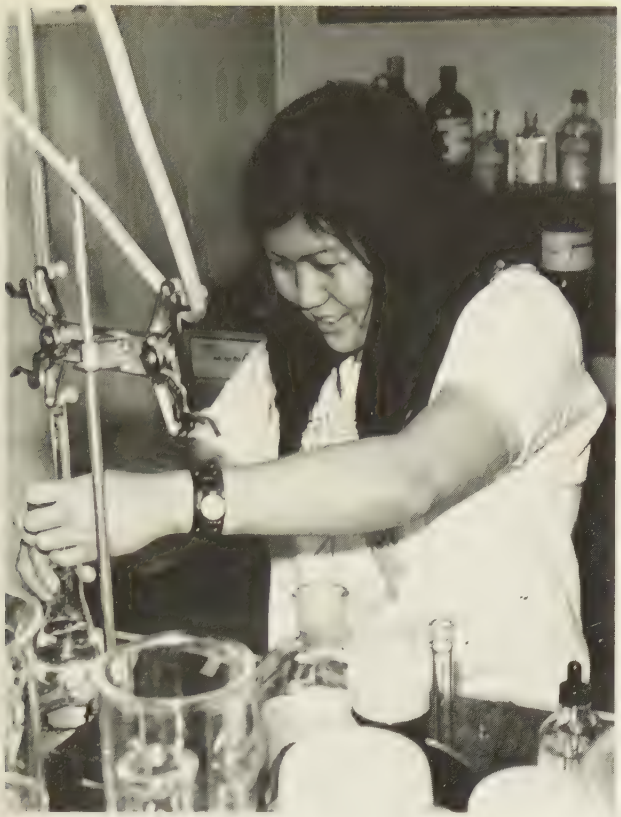
DRIVING A CORING PIPE in the bed of Don Juan Pond, scientists prepare to extract a sample of the strata of the ice-free area.

Dry valleys hold mystery for NSF research teams

Sir Robert Falcon Scott named the Taylor Valley, across McMurdo Sound from McMurdo Station, in honor of the geologist on his last "Terra Nova" expedition, Griffith Taylor. In a chapter of SCOTT'S LAST EXPEDITION, Taylor wrote: "A strong keen wind was blowing up the valley, but the most remarkable feature of this region prevented it from becoming obnoxious. There was no drift snow! Imagine a valley four miles wide, 3,000 feet deep and 25 miles long without a patch of snow -- and this in the Antarctic at latitude 77.5°S..." The dry valley region has continued to intrigue scientists since that time, and since the International Geophysical Year has claimed a greater population of earth scientists than any other area of Antarctica. Scientists today are studying the region to obtain answers to such questions as why it is snow-free and why certain ponds do not freeze during the dark winter. Other researchers are probing the effect of man's presence in the area.

HOLDING A BOTTLE of water taken from Lake Bonney, Bill Connor of Virginia Polytechnic Institute (BELOW) prepares to study its contents for information on the metabolism of aquatic ecosystems.





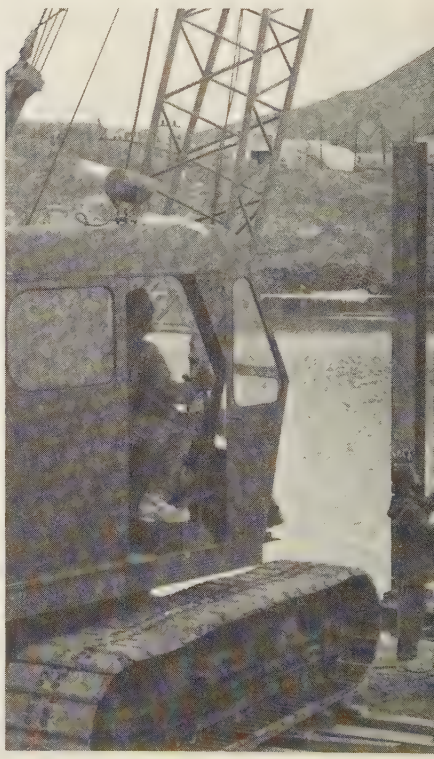
EXTRACTING A QUALITATIVE ANALYSIS of a water sample from Lake Bonney, Gail Tomimatsu of VPI (ABOVE) notes a chemical reaction. (RIGHT) Exposed facings make the dry valleys a popular geological study region.

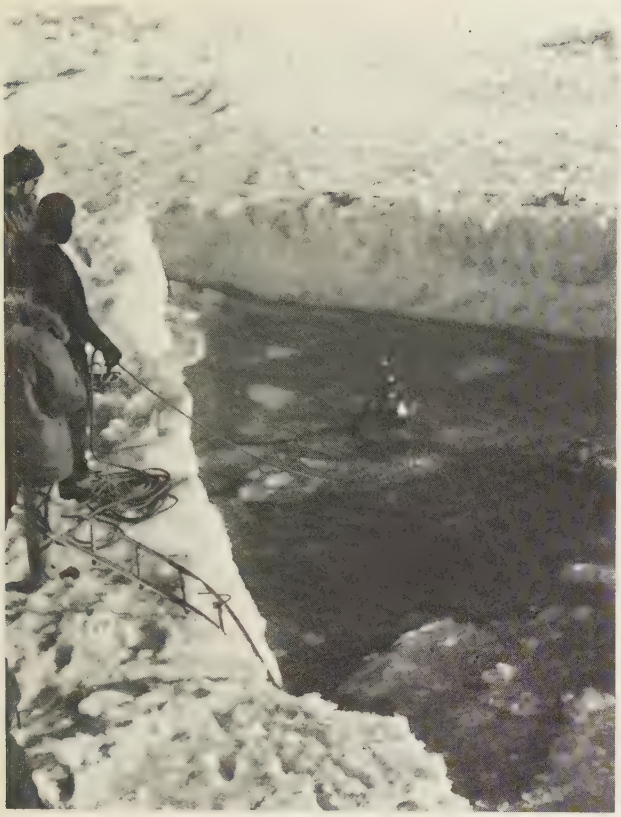
KEEPING CLOSE TABS on his work, a Navy Reserve Seabee Welder joins a seam in the facing while reconstructing the damaged pier.

Pier construction is top priority effort

In March 1972, just after McMurdo Station had entered the winter-over period, a fierce storm buffeted the base with 80-100 knot winds which caused general damage throughout the town, but left the pier in Winter Quarters Bay severely twisted and broken after three years of construction. More than 80 per cent of the steel and wooden quay lay scattered about the shore and in the frigid waters of the bay which serves the U.S. Antarctic program as the main off-loading point for more than 95 per cent of all cargo reaching the continent each year. Lack of winds hampered reconstruction efforts early in the next season when the ice stayed in the ship channel and hampered Navy divers in their inspection of the bottom and in removing the twisted girders. When the wind blew, USCGC Northwind helped move the ice and crews began sinking the 45 foot-10 inch "I" beams into the bay and laying the 10x10" wooden facing. The pier was ready for the first ship, USNS Mirfak, in Jan. 1973.

SINKING NEW PILINGS, crewmen steady the driver (BELOW) while the crane operator lowers it onto the girder for positioning.

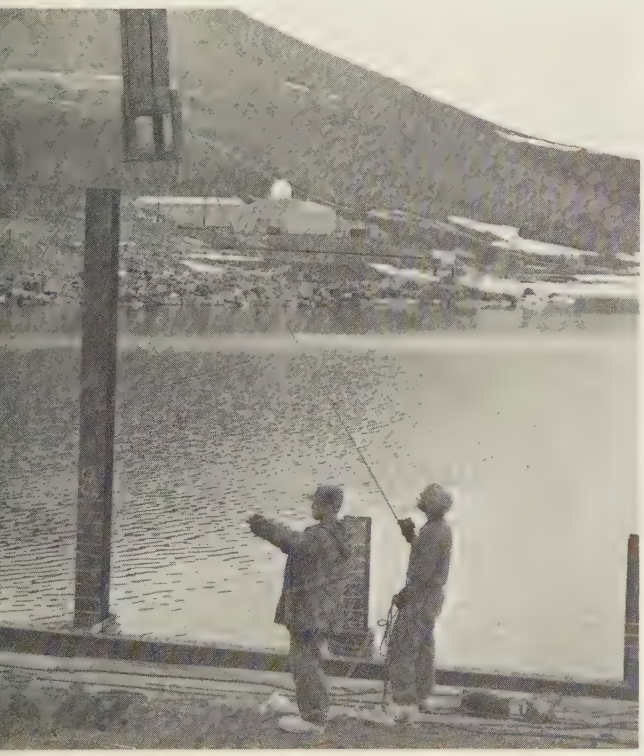




SURVEYING THE SITE, Scuba divers probe the bay bottom (ABOVE) to assess the damage to the pier's underwater structure.

GREETING THE FIRST ship arrival after completion of the pier, (BELOW-RIGHT) crewmen wait on Hut Point for its docking.

COMPLETING THE FACING, workmen (ABOVE) place a girder in position for welding to the nearly finished construction effort.

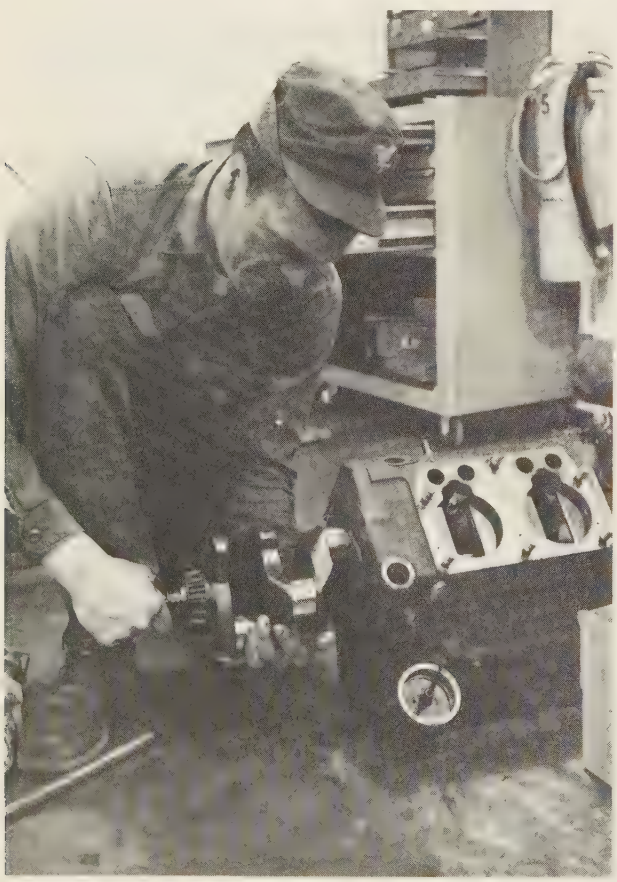


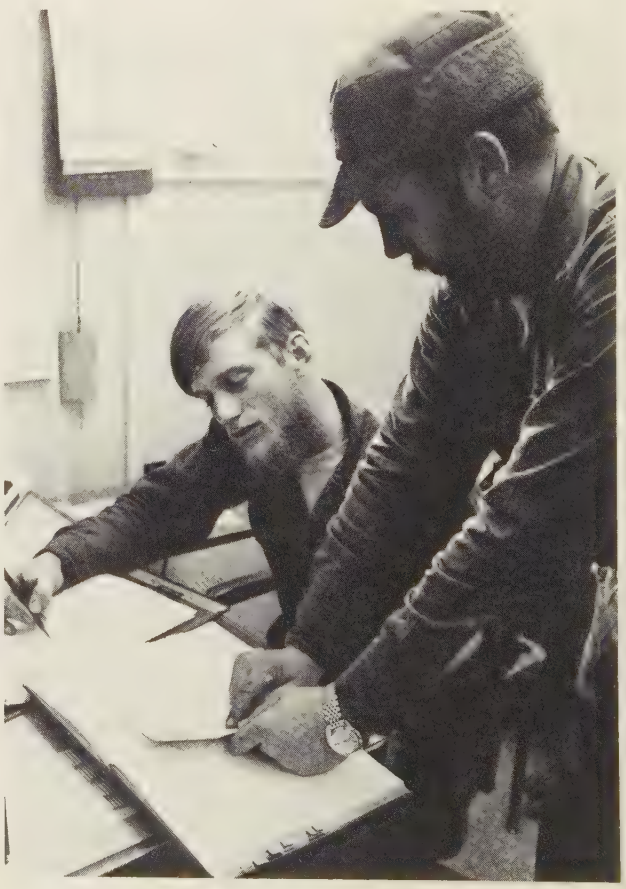
McMurdo system keeps fuel supplies available

The winter fly-in (WINFLY) each season brings two or three passengers whose job entails laying a four-inch fuel line some five and one half miles from the fuel storage area at McMurdo Station to the ice parking lot of the runway being built to receive the cargo-bearing wheeled aircraft. During the 1972-73 season 2.3 million gallons of fuel were pumped to Williams Field through the line. The hose is retrieved when the late season ice thins. The fuel at McMurdo is in eighteen steel tanks, the largest of which holds more than two million gallons. In maintaining the fuel system, the fuels division is responsible for the cleanliness of tanks and lines, and maintenance of these facilities in addition to the great number of pumps and valves needed in the complex operation.

REPLACING A CRANKSHAFT, Engineman second class Larry Wilson repairs a motor used to power one of the large fuel pumps at McMurdo.

CHECKING FUEL RECORDS, Storekeeper Frederick Scott (L.) goes over the supply on hand with division head Lieutenant Norman McCrimmon.



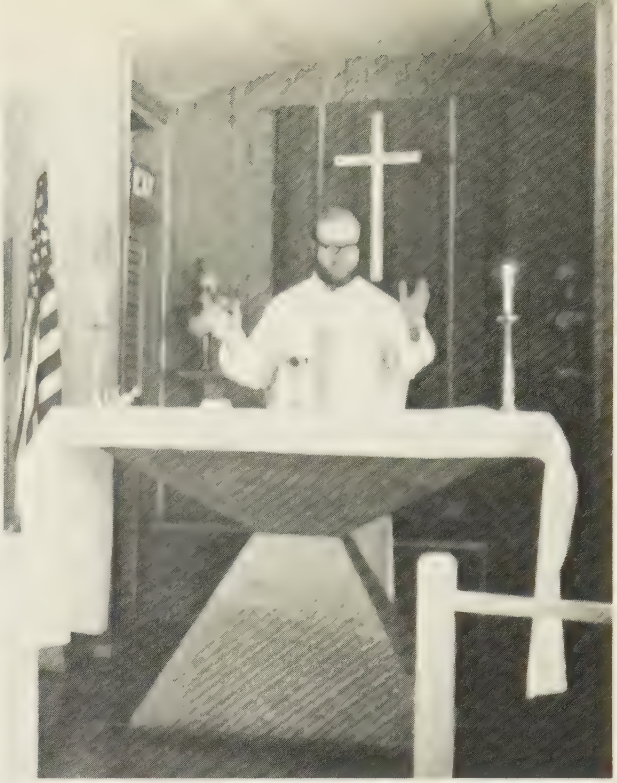


HAULING THE FUEL LINE for hookup to the USNS Maumee (T-AO-149), Navymen fight the extreme Antarctic weather in off-loading the tanker.

PART OF THE 18-TANK fuel system at McMurdo, the containers hold all the fuel needed to sustain operations at the large U.S. base.

THE CHAPEL OF THE SNOWS serves the religious needs of U. S. sailors and scientists, and LCDR Cecil Harper (BELOW), conducting a drawing in the dining hall, is the station chaplain.

PREPARING FOR COMMUNION, LT Edward F. Boucher, Seabee Center Davisville chaplain, conducts a daily mass at McMurdo Station.



SAYING THE LITANY of the Catholic mass, Father Boucher ministers to those of New Zealand's Scott Base as well as those from McMurdo.

Antarctic chaplain has world's biggest parish

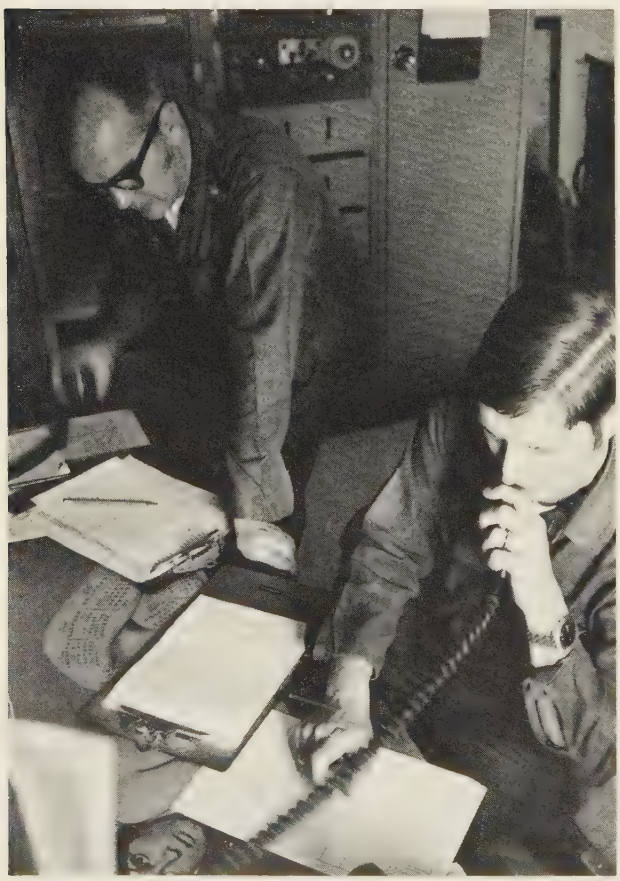
Of all the "circuit riding" ministers and priests in the world, none has a bigger travel problem than the clergymen ministering to the men in the U. S. Antarctic program. With their parish extending from McMurdo to Pole Station to the Seabees building Siple Station, a DEEP FREEZE chaplain must be constantly moving to tend to his flock. To help solve the problem of the lack of a resident Catholic chaplain, the diocese of Canterbury in New Zealand supplies priests on a rotating basis throughout the season to conduct services on the continent. In addition, the Construction Battalion Center, Davisville, R.I. furnishes a priest for an extended period. When not conducting services, the chaplain counsels those in need of assistance and aids them in obtaining relief. In addition, he trains laymen in conducting services in his absence.

CONDUCTING A PROTESTANT service, Chaplain Harper's sermons are sometimes tailored to the problems of men in isolation.

Firemen guard against potential hazards

Sixteen men man the facility full time, but the responsibility is felt and shared by every man on the continent. That is the need to be constantly on guard against the greatest Antarctic hazard of them all -- FIRE. The threat of fire is always high in the minds of men on the ice, as the low humidity quickly dries materials, making them more flammable, than in humid climes. The living conitions of the fire crew are among the best in Antarctica, because they must be rested and ready to respond instantly to a signal calling them to a fire. All the buildings at McMurdo are monitored and represented on a common board in the fire station duty office. Pre-season training in Davisville gives nearly everyone first-hand practice fighting actual fires, and using the equipment.

IN FLIGHT-FOLLOWING, Chief Air Controlman Don McCarthy and Air Controlman first class Fritz Brand monitor a fire emergency call.



FILLING A FIRE BOTTLE, Fireman Scott Johnson inspects to see that the station's extinguishers are checked at frequent intervals.

ON A TRAINING RUN, (BELOW) a fireman combines a ladder drill with a real service in disposing of a hazardous icicle on a building.

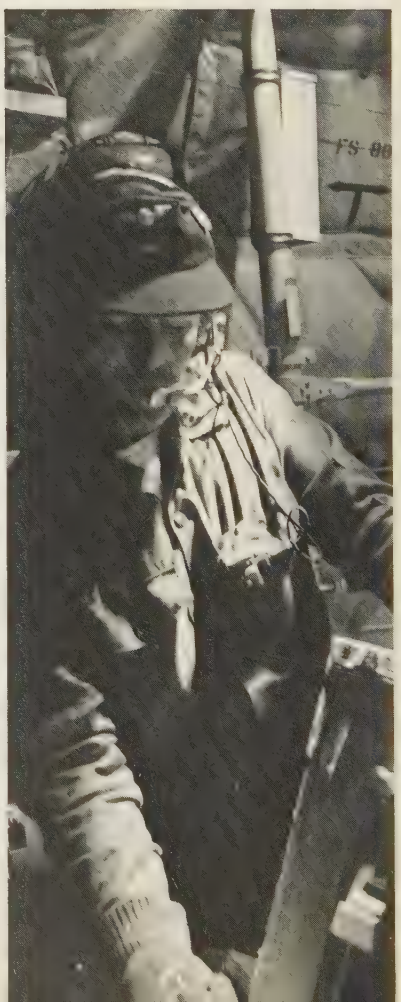
ROLL 'EM. (ABOVE) Equipment pours from the station in responding to an automatic signal on the board, indicating the need for a check.

EXAMINING NEW EQUIPMENT (BELOW) Chief Hull Technician Robert Miniati checks over the pump for the "light water" unit.

CHECKING A SYSTEM on an LC-130 flight, Aviation Electrician's Mate first class Elias R. Fernandez relays the information to the pilot.

Keeping them in the air requires good planning

With only three LC-130 "Hercules" aircraft and four UH-1N "Huey" helicopters, Antarctic Development Squadron SIX (VXE-6) made significant progress and achieved all programmed tasks during the 1972-73 DEEP FREEZE logistic support season. The support of scientific work in the dry valley regions, establishment of a helicopter fuel cache at Marble Point and completion of the aeromagnetic survey of Ross Island were important rotor-wing accomplishments. The large cargo-carrying Hercules aircraft supported tasks further afield, putting in and retrieving the survey team on the Lassiter Coast, aiding in the final construction efforts at Siple Station, carrying additional building supplies for the geodesic dome at South Pole Station, and resupplying the French traverse party out of Carrefour. In all, the squadron made 1,900 flights for 4,463 hours.

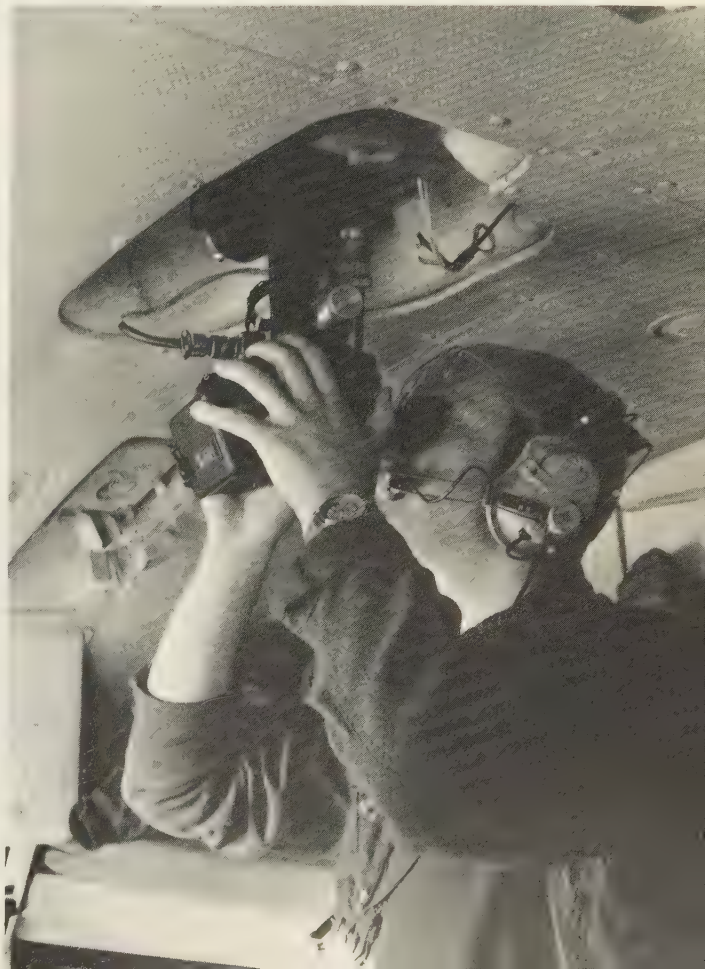


ADJUSTING THE CARGO loading configuration of construction materials, Chief Aviation Boatswains Mate "Dutch" Shultz tightens the straps.

WRITING A NARRATIVE of the mission, Lieutenant (j.g.) Bob O'-Keefe (BELOW) logs the significant events on a flight to South Pole Station.

PLANNING are: (L TO R) Commander Vernon Peters, executive officer, Cdr. John Dana, commanding, and Cdr. Bruce Willey, operations.

TAKING A SIGHTING, a crewman reads the position of the sun (BELOW) in practicing polar navigation procedures for long distance flights.



CLIMBING FROM A SNOW CAVE, a Para-rescue team member practices techniques which will aid him in rescuing downed airmen or scientists.

Para-rescue team trains to aid downed parties

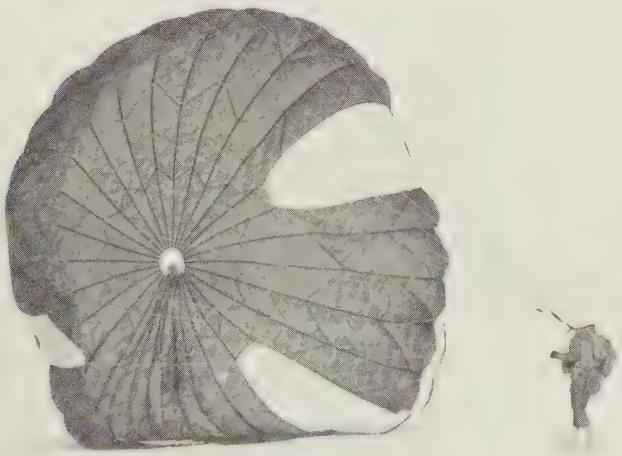
Because of the extremely hazardous nature of everyday Antarctic operations, the Chief of Naval Operations authorized VXE-6, the air arm of the logistic support program, to form a parachute rescue team in 1956. Seventeen years later find the team still working to lower the odds against a scientist or aviator exposed to the non-relenting Antarctic environment through mishap or heavy weather. The team members spend many hours with the squadron flight surgeon learning and practicing first aid techniques tailored to Antarctic conditions and needs. They also practice for long periods in actual survival conditions, using prepared rations for their complete diet while living in tents and snow caves. Fourteen parachutists made 124 jump during the season, practicing free-fall and other jump techniques designed to provide a more effective rescue service.

PACKING A CHUTE, Airman Cliff Leeder straightens shroud lines while inspecting all parts for proper condition.

THE QUICK WAY DOWN starts with a leap from the ramp of an LC-130 (ABOVE) for this parachutist. Williams Field is at the LEFT EDGE.

ON THE SNOW SURFACE, the team member (BELOW) collapses the chute for retrieval, before proceeding to his objective.

A BILLOWING CHUTE gives the rescuer a chance (ABOVE) to maneuver into a position for a pin-point landing near his jump objective.



A GOOD EYE is needed in securing creative photos, as Photographer's Mate second class David Dyer surveys a potential subject.

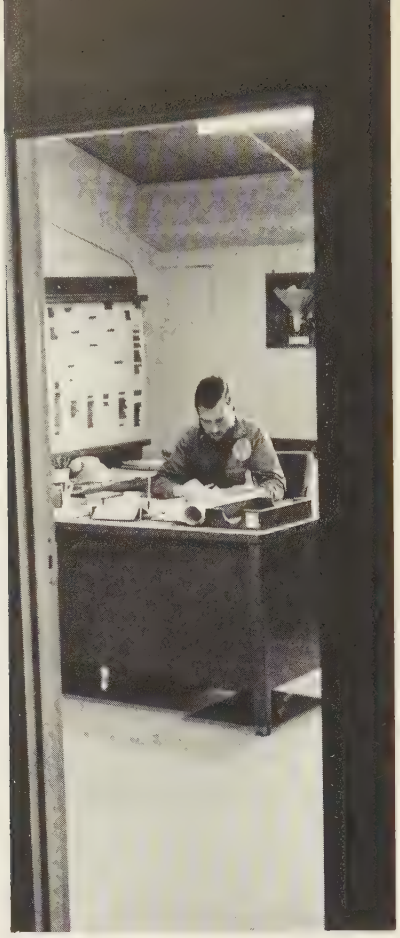
Polar photography needs diversified techniques

Both still and motion picture coverage are important in documenting the many sides of science and support, and U. S. Navy photographers range as far afield as the Lassiter Coast and Carrefour in fulfilling their mission. In the past, photographers have documented traverses, flown on seal and penguin counting missions, sailed in ships, and photographed many other facets of polar science and exploration. To accomplish this, a polar photographer must carry a wide variety of equipment and materials. Mapping is another task. Hundreds of thousands of square miles of the Antarctic continent have been covered by aerial photographers intent on mapping this vast expanse of territory. This is accomplished by means of trimetregon photography, or photography with three cameras. When parallel and overlapping flight paths are flown, this affords vertical and oblique views from which outline and altitude can be derived.

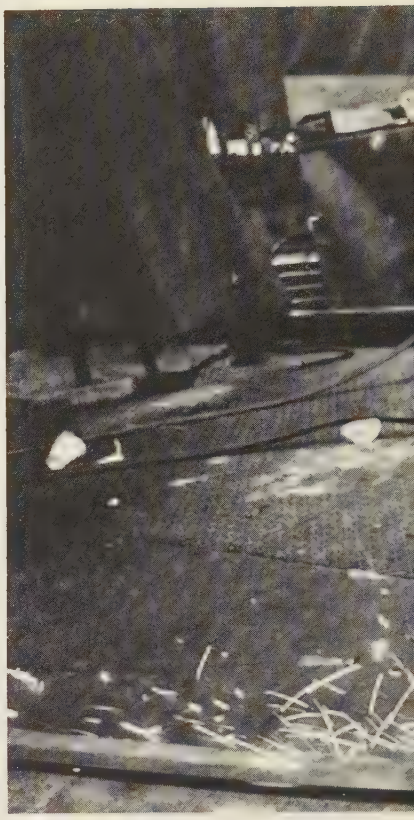
HARSH WEATHER doesn't stop Photographer's Mate Third Class Tyler Redfield from documenting an operation at McMurdo Station.

NUMBERING NEGATIVES for placement in the filing system, Photographer's Mate third class Terry O'Connor marks each strip.

ADJUSTING FOCUS, Photographer's Mate third class John Howard makes copies of transparencies for scientific records.



LOOKING OVER PLANS at McMurdo, Lieutenant Commander Jay Stevens, public works officer, checks each one and assigns a work force.



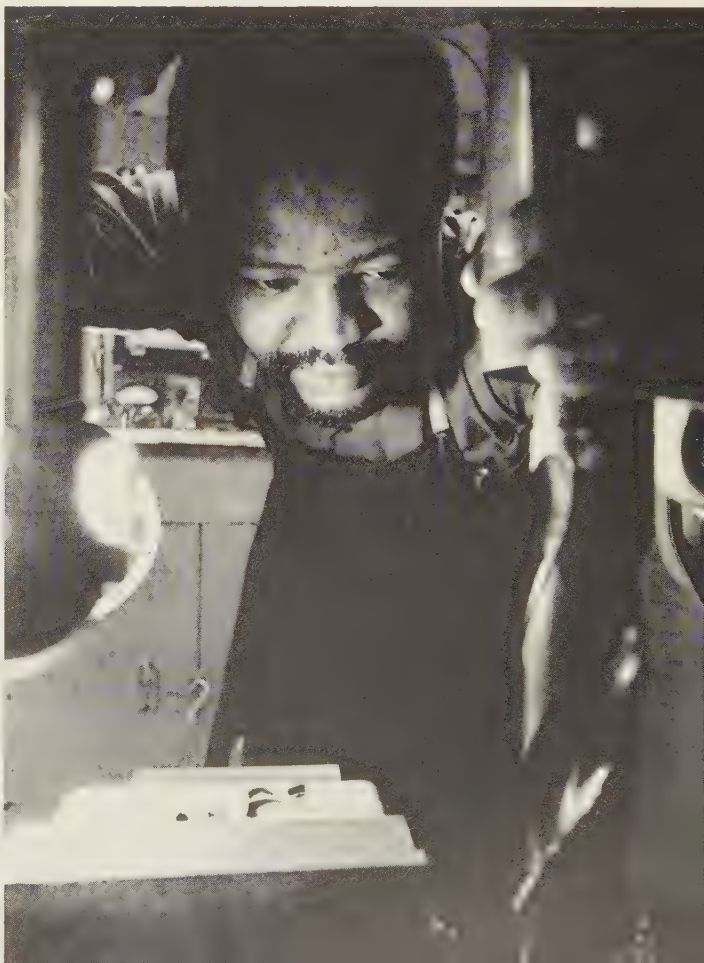
GUAGING A STRAIGHT LINE, a sheet metal cutter prepares the material (ABOVE) for the former, who will make an air duct for a building.

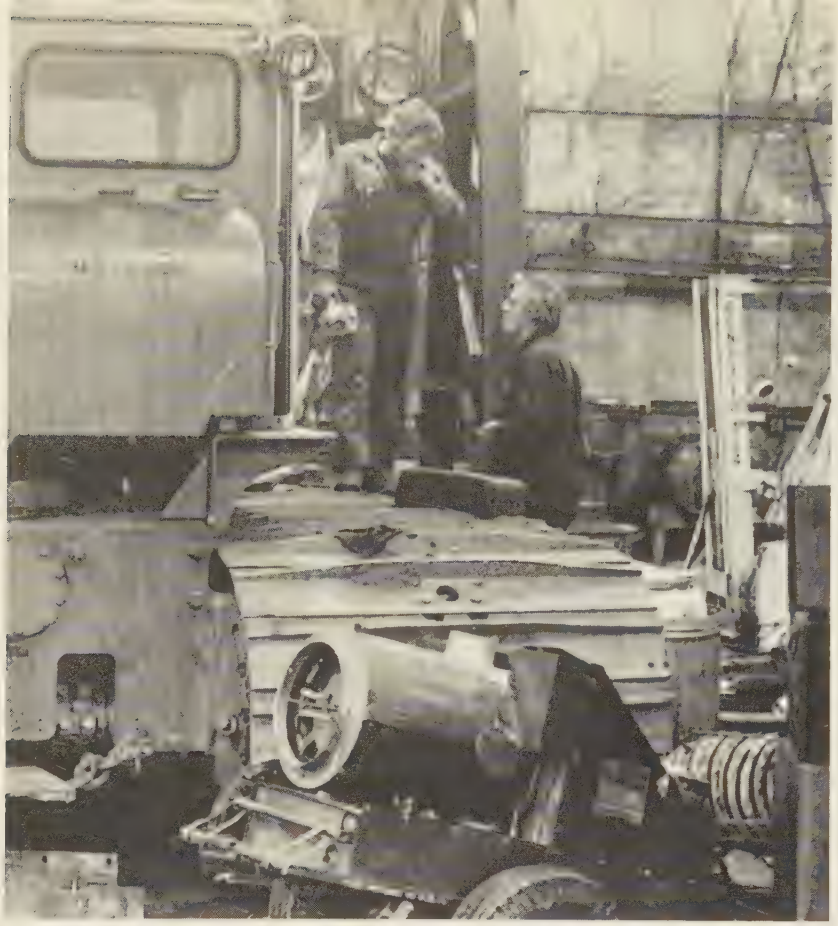
Keeping it running is an all-hands job

The home handyman who thinks he's really put upon when he has to keep the lawn in shape or change the occasional fuse, would be a raving paranoid after just about two days of running the Public Works department. It maintains all existing property and equipment used by the Navy, and plays a large role in new construction as well. Keeping all of the much-needed rolling stock on the road is one of the major tasks of the crew, and it takes a great amount of skill and know-how in counteracting the punishing effect of the ever-present cold on the vehicle's engine and other vital parts. In keeping the station running they also supply electric power - using diesel generators, build fixtures and equipment for accomplishment of other department's missions, and a myriad of other tasks without which the program could not operate. The Public Works crew really keeps the program rolling.

EXHIBITING HIS PRECISION at a lathe, Chief Machinery Repairman Joe Martin (RIGHT) turns a piece of metal needed to repair a truck.

FIXING PROPER POSITION, Machinery Repairman first class Robert Head (BELOW) sets up a radial drill press for operation.





CONFERRING ON A MAINTENANCE question, two New Zealand mechanics (LEFT) on contract at McMurdo, discuss the repair of a D-8 "Cat".

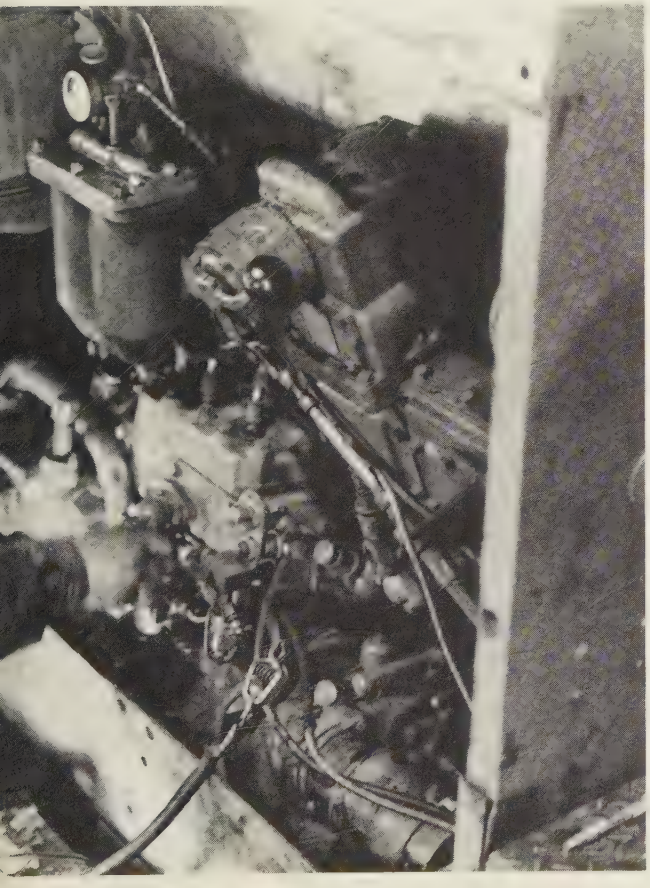
New Zealander on contract aid speedy repa

REINSTALLING A D-8 STARTER after repair, New Zealander Alastair Brass (BELOW) tightens bolts to secure it to the engine.

ALIGNING PARTS FOR WELDING, New Zealand Caterpillar mechanic Howard Berendt (ABOVE) repairs tractors in the McMurdo garage.

OVERSEEING HIS DOMAIN, U. S. Army Captain Frank Wright, transportation officer, looks at the vehicles in his shop for repair.

CHANGING A MASSIVE TIRE on the PM3A shuttle bus, Construction Electrician second class Will Bushall tightens a lug nut.



TUNING A DIESEL GENERATOR, Construction Electrician second class Newt Coughenour (LEFT) maintains capability in the power plant.

Power and 3/4"-ply are products of their task

WEARING EAR PROTECTORS to guard against the intense noise level, two power plant operators (BELOW) check the power plant output.

KEEPING A GOOD CUTTING EDGE, Builder first class Frank Acs, (BELOW) begins the exacting task of filing a circular saw blade.

CAREFULLY SIGHTING along a straight line, Builder third class Carl Brian (ABOVE) cuts a repair part on a band saw.

CHOOSING MATERIALS for a project, Builder first class Paul Renaud (R.) and Builder third class James Mitchell (BELOW) haul them inside.

MEASURING PRECISELY, a steelworker prepares to make a cutting mark (LEFT) on a steel girder, before cutting it to length for the pier.

Expert craftsmen apply their varied skills

ADDING THE FINAL TOUCH to a sheet metal roof vent (RIGHT) Steelworker first class Bill Palmer tightens a brace.

WELDING A BEAM, a steelworker prepares a girder (BELOW) for construction of the ice wharf at Winter Quarters Bay.

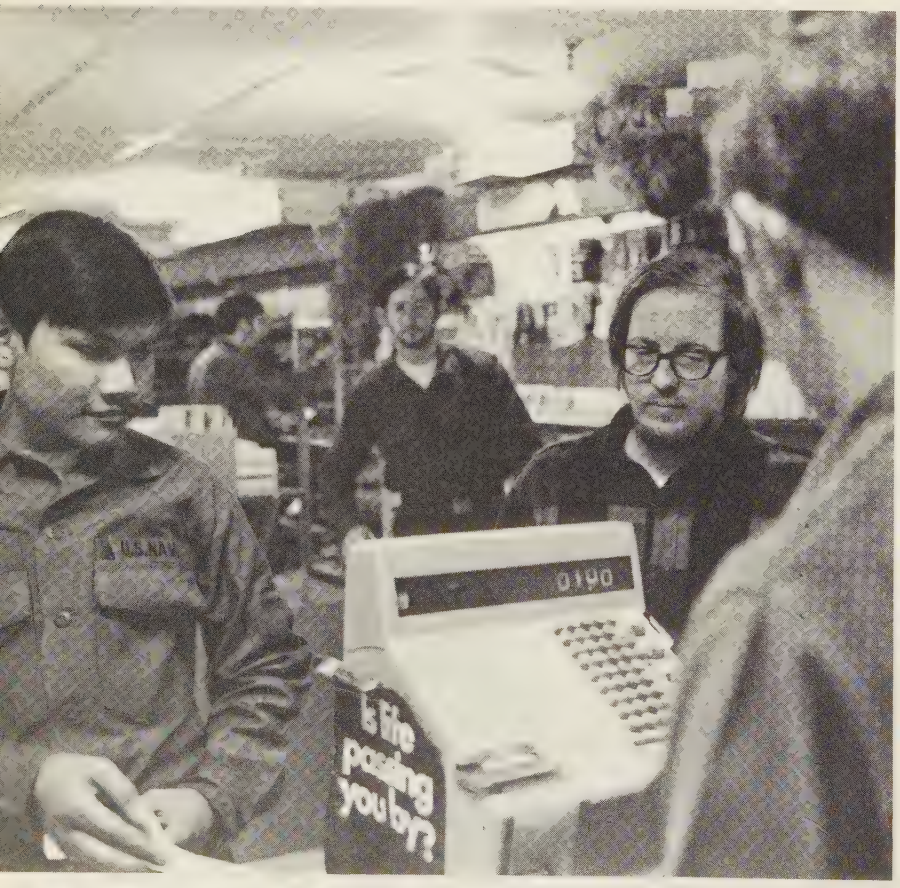
LOOSENING A FLANGE, Constructionman Jim Sellers removes one end, and Utilitiesman second class Dennis Larochelle the other, while (BELOW) Utilitiesman first class Jackie Williams cuts pipe.

McMurdo's "Macys" gives shoppers real value

A far cry from the company store heralded in Ernie Ford's "Sixteen Tons," the Navy Exchange outlet at McMurdo Station is quite responsive to the resident's needs, and supplies everything a modern explorer or scientist could ever want or expect to find in this far outpost of civilization. It stocks everything from phonographs to greeting cards, shaving needs and even an assortment of wife-pacifiers in the form of rings and other jewelery to soften the bite of a season's absence from home and the store to store rush of Christmas shopping. A new item on the shelves is cause enough for a special trip to check it out. Part of the worldwide Navy retail system, all profits from sales in the store go to buy recreation equipment for the men at all U.S. Antarctic stations.

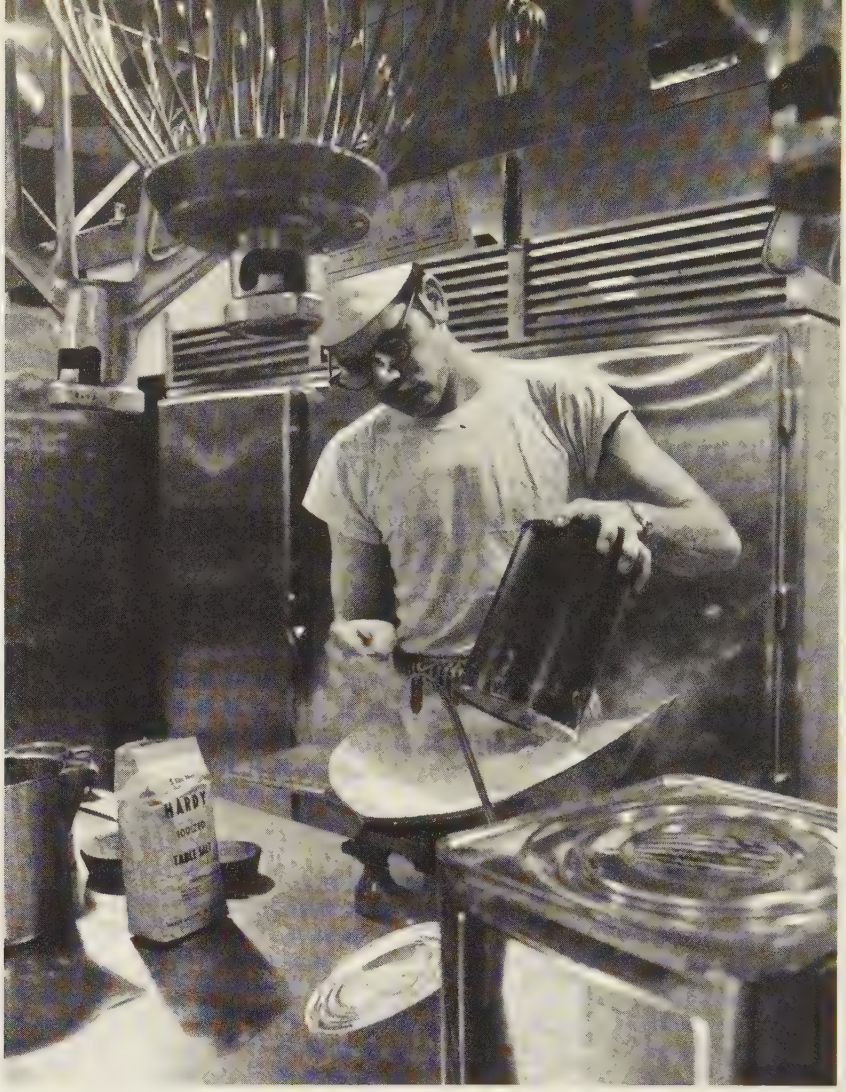
LINING UP at the cash register, customers at McMurdo's "department store" hear the familiar ring of commerce.

CROWDING AROUND to hear of the latest bargains from Warrant Officer Dewey Painter (BELOW), customers weigh their decisions.



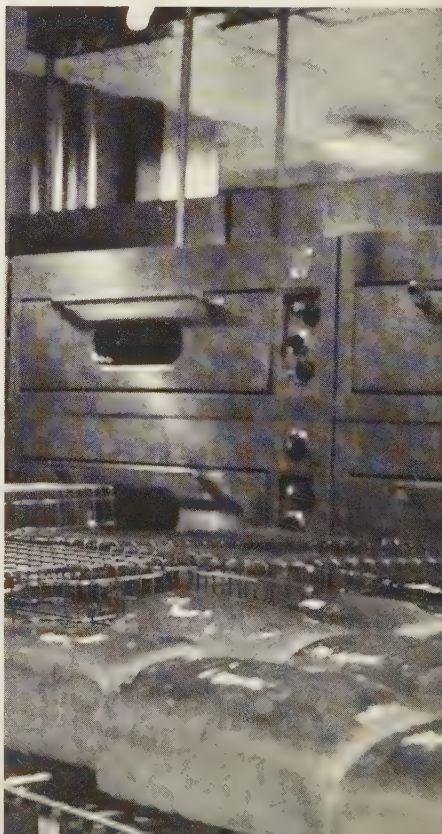
STOCKING NEW MERCHANDISE, Ship's serviceman Elzie Lewis Jr. adjusts placement of a cigarette lighter in a display case.

CHRISTMAS AHEAD, McMurdo shoppers search for gifts for friends and family, to heighten spirits at home and on the continent.



McMurdo Morale Central keeps rating high

The mess hall is undoubtedly the morale headquarters for hard working sailors and scientists at McMurdo, who work long hours in rugged terrain and a hostile climate. The general mess serves four meals a day to the nearly one thousand residents of the town, and fare as varied as a ham sandwich to a lobster dinner may be found. Hundreds of thousands of pounds of stores are received each year, and the men find themselves taking in a substantially increased number of calories per day, but most hold their weight because of the rugged activity. Pole Station cooks undergo special training in baking in order to learn to cope with the more than 9,000 foot altitude. Their bread is some of the best.



WEIGHING POWDERED MILK to make bread (LEFT), Commissaryman first class Ernest Stander prepares for nearly 100 loaves.

SLICING A SHEET CAKE, Personnelman James Runkle (RIGHT) makes individual portions for serving with the noon meal.

STACKING BREAD for cooling, Commissaryman Eric Sweatt places the loaves on a rack before slicing and serving at dinner.

CHECKING CLEANLINESS of kitchen utensils, Ensign Louis Defrancisco, (L.) food services officer, maintains a high standard.

Cooking for 1000 men is a big chore

COMING UP MEDIUM RARE, Commissaryman third class Walter Aldrige serves sirloin steaks to hungry sailors and scientists.

MAINTAINING FULL SUPPLIES, Aviation Boatswain's Mate James Merrit checks and refills the butbutter container during a meal.

WASHING UP after a big meal has never been a sought-after chore, and Utilitiesman James Sellers is thankful for the machine age.

"FINGER LICKIN' GOOD" says Photographer's Mate second class Parker Davis of the McMurdo mess' southern fried chicken.

Survival not of fittest but of best prepared

With the severity and unpredictable nature of the weather, any Antarctic situation can suddenly become a survival situation. Without proper preparation and training, the chances of survival in this unforgiving setting are indeed slim. All Navy flight crews, and other men working in remote areas attend training to teach them to overcome the greatest bar to being rescued and returned - that of the fear of the unknown. Here the men learn to construct under-snow shelters, how to carve ice blocks, to recognize signs of frostbite, and other hazards of the icy clime. The byword of the school is "keep it clean, dry, and loose", figuring these clothing hints to be the keys to survival. With 5 1/2 million sq. miles to get lost in, this school literally teaches "what to do till the doctor comes."

MAKING SNOW BLOCKS, Lieutenant (j. g.) Bob Nyden (ABOVE) directs their construction for a wind shelter, as (LEFT), Lieutenant Commander Gary Strain prepares to fire up a small cooking stove.

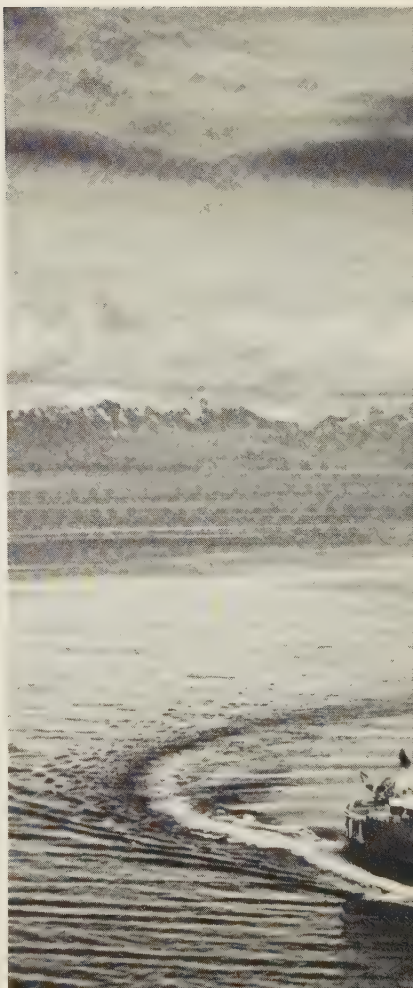
MAKING SNOW BLOCKS, members of a survival training party (RIGHT) cut domino-shaped pieces of snow to form a wind-break type wall to provide protection while awaiting rescue.

WORKING IN CAMP after erecting shelter, (BELOW) an aircrewman learns one of the best survival techniques, familiarity with methods and procedures which will insure his early return to base.

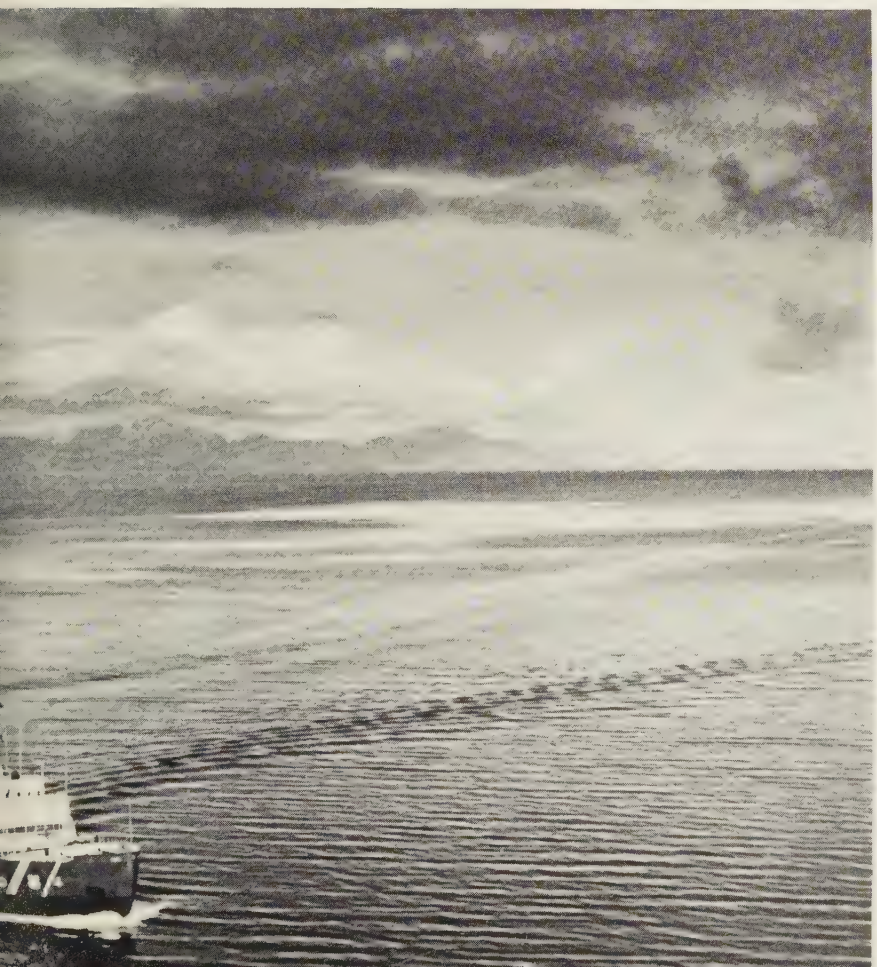
UNDER DARKENING CLOUDS, (RIGHT) USCGC Northwind (WAGB-282) breaks ice in the Ross Sea, while cutting the channel to McMurdo Sta.

Ships of all sizes tackle all types of jobs

In addition to the powerful icebreakers which cut the channel to McMurdo Station each year, the U.S. Antarctic program utilizes several other types of ships in carrying out its mission of scientific research. All the cargo ships have ice-strengthened hulls to protect them from any ice they may encounter on the 10,000-mile trip from U.S. ports to McMurdo. The USNS Mirfak (T-AK-271) has in addition, an icebreaker-type bow and forward aloft piloting station to aid its transit. More than five million gallons of fuel is delivered to McMurdo by tanker each year to satisfy requirements there and to be flown to inland stations. Two ships, Hero and Eltanin are used entirely on scientific missions, and sail Antarctic waters engaged in a number of scientific disciplines. As summer advances, ice conditions grow less difficult and the Coast Guard icebreakers may be released from escort duties to perform other tasks, such as oceanographic studies and biological surveys.



THE MIGHTY MOUSE, so-called because of its size and ability, USNS Mirfak (T-AK-271) steams (ABOVE) into Winter Quarters Bay to unload.



MAKING WAVES in the Straits of Magellan, (LEFT) USCGC Glacier (WAGB-4) prepares to set course for the Antarctic Peninsula.

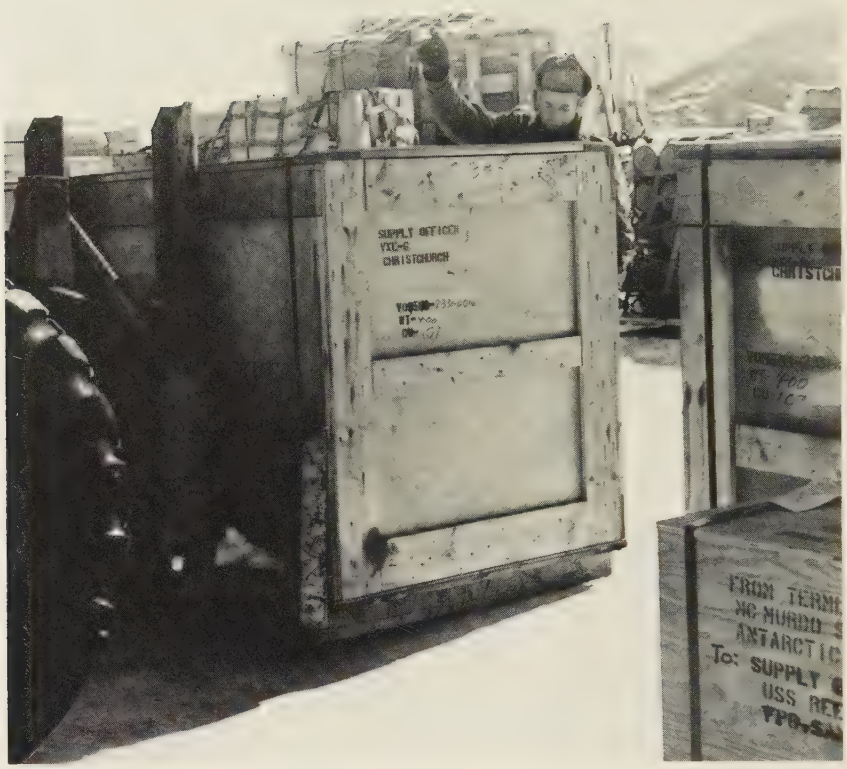
DELIVERING ALL FUEL requirements for the entire year, the tanker USNS Maumee (T-AO-149) brings (ABOVE) seven Million gallons.

RIDING UP ON THE ICE to crush it with its massive bow (RIGHT) USCGC Burton Island (WAGB-283) breaks ice in the ship channel.

They bring food, furnishings, and fuel

THE COLORFUL SAIL of the research vessel Hero (LEFT) contrasts with the blue Antarctic water in carrying out a scientific study.

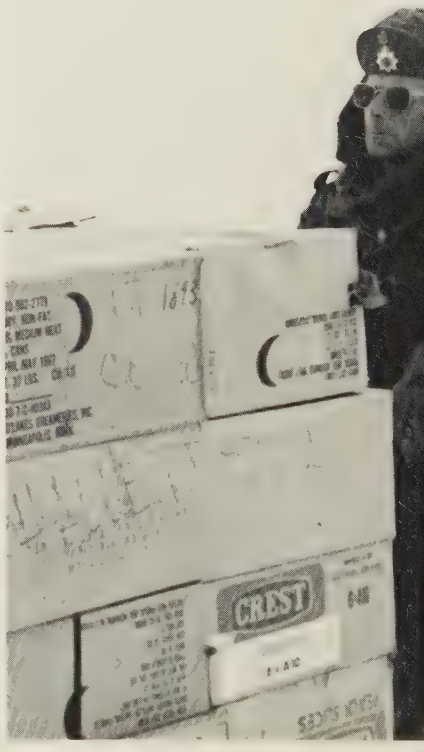
DELIVERING THE GOODS, USNS Towle (T-AK-240) brings thousands of tons (BELOW) of equipment, stores, and building supplies to McMurdo.



DIRECTING THE PLACEMENT of a forklift load of cargo at McMurdo's Williams Field, SGT T. T. K. Hauraki signals the driver.

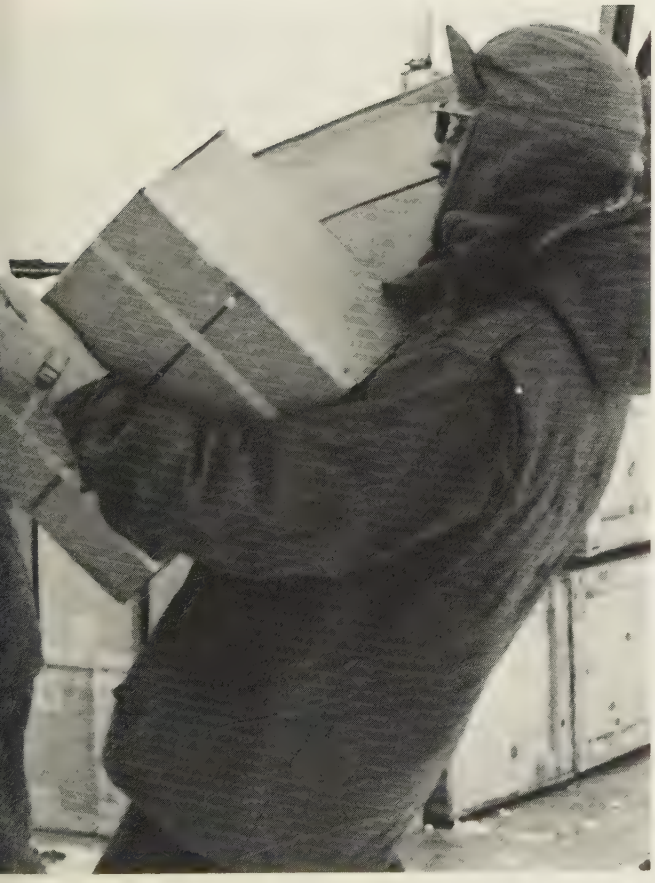
New Zealand Army helps untangle cargo maze

No one has a colder and more demanding job in the Antarctic than the cargo handling detachment of the New Zealand Army. This team worked around the clock for three and a half months at McMurdo's Williams Field to load and unload more than three and a half million pounds of all types of cargo needed to keep the science and support operations functioning at U.S. and New Zealand Antarctic stations. Adding to the demands on the men were unpredictable weather changes causing rescheduling, and often the unloading of cargo for one destination so that the aircraft could then be directed to another. Three teams of Army men served in this valuable function, aiding scientific research.



STACKING CARGO BOUND for Hallett Station, SSGT Joe Wallace and DVR H. Tuka insure its safe handling and proper placement for transport to the U. S. Antarctic research station north of McMurdo.

RETRIEVING PALLETS for return to Christchurch, members of the New Zealand Army team stack them in the cargo yard (ABOVE) while (BELOW) DVR H. Taylor (R.) assists DVR H. Tauerki in lining up.



SITTING POISED for the return trip to Christchurch, a C-141 Air Force Starlifter waits on Williams Field for passengers and return cargo.

Williams Field "Strip" has a town of its own

Out on the Ross Ice Shelf, some six miles from the men on "the hill" (McMurdo Station) is another self-contained community. Williams Field is the summer home for several hundred men who maintain the aircraft and operations to and from the other stations. It has its own sick bay, chow hall, quarters, church and all the other things which go to make up a small town. It was named for Construction Driver Third Class Richard T. Williams who died when his tractor broke through the Ross Sea ice on January 6, 1956. Each year an ice runway is built on the sea or "annual" ice. This is used by wheeled aircraft until it breaks up or becomes unsafe for use, usually early in January each year. Then, operations shift to the skiway built on the Ross Ice Shelf in a direct line with the ice runway so that they can share the same landing aids. Around the clock operations mean that many "strip" residents never make it up to "The Hill" during an entire season's operations of flying and maintenance.

COLORFUL BUILDINGS stand out against the snow, (BELOW) making Williams Field highly visible for flights returning to base.

MOVING INTO POSITION, a tractor driver pulls an auxiliary power unit into place (ABOVE) to provide a starting boost for cold engines.

RUNNING A MAINTENANCE CHECK on the ground control approach system, (ABOVE) Air Controlman first class "Curley" Gaston adjusts a setting.

SPRAWLED ACROSS THE ICE SHELF, the sight of Williams Field is a familiar one to sailors and scientists returning to Antarctica by air.

MAINTAINING AN AIRCRAFT, a crewman (ABOVE) checks a wingtip before a flight from Williams Field to a remote field party area.

IN THE TOWER, Air Controlman first class Don Barker talks to a pilot returning from the South Pole after resupplying a science project.

RETURNING TO THE SHIP, A Coast Guard helicopter flies over open water after depositing scientists to study nearby animal life.

LEAVING THE SLOPES of Mt. Erebus, Navy UH-1N pilots of VXE-6 prepare their twin-engine helicopter for the return trip to McMurdo Station.

Versatile helicopters give unique capability

A great innovation in Antarctic operations occurred when the Bell UH-1N "Iroquois" helicopter replaced its predecessor, the UH-1D as the main mode of short-haul passenger and logistic vehicle in the McMurdo operating area. The new version has twin-turbine engines, making it safer and more dependable. With two engines higher altitudes are attainable, and new project sites can be visited, which were formerly impossible for helos. The Coast Guard employs shipboard-based helos, also, and assists by joining in ice reconnaissance, passenger and cargo lifts, and many additional tasks in support of the scientific effort in Antarctica.

PREPARING TO BEGIN their studies in a dry valley across McMurdo Sound from McMurdo Station (BELOW) scientists begin unloading their equipment.

A RED SMOKE BOMB signals the hovering pilot (RIGHT) the wind direction, before landing to resupply a science camp in Wright Valley.

Varied tasks are handled by helo crews

PARA-RESCUE TRAINING is handily effected (LEFT) using the UH-1N helicopter as a jump platform in sharpening proficiency.

RESUPPLYING GLACIOLOGISTS at their field camp (BELOW) a VXE-6 helps bring fresh provisions and mail to Meserve Glacier.

NEW ZEALAND'S FIELD CAMP at Shapeless Mountains is visited by a helicopter (ABOVE) bringing new arrivals to begin their study.

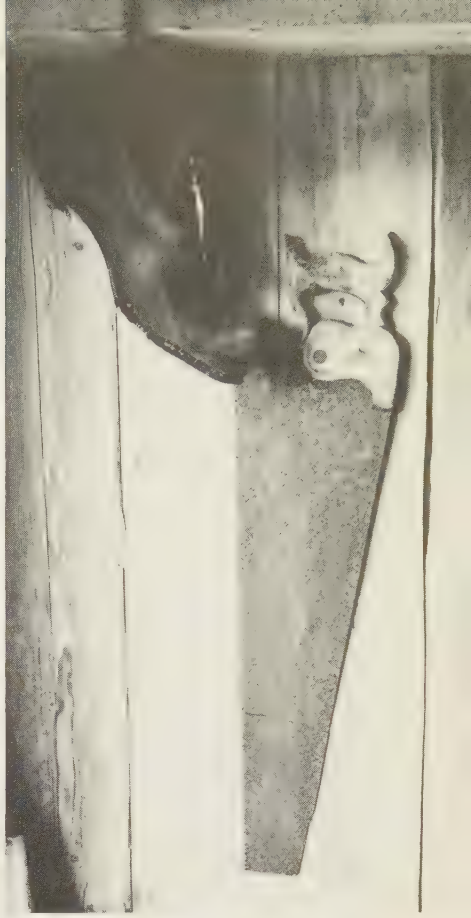
LIFTING A FUEL BLADDER, the Navy helo (LEFT) will transport it to Marble Pt. to serve as a refueling point for dry valley operations.

STANDING OUTSIDE Shackleton's Hut at Cape Royds (RIGHT) supplies have survived more than 60 years in the extreme polar weather.

ROWS OF STORES remain on the shelves inside Shackleton's hut (ABOVE) revealing several familiar brands, while, (RIGHT) a penguin rookery at the front door provided opportunity for biological study.

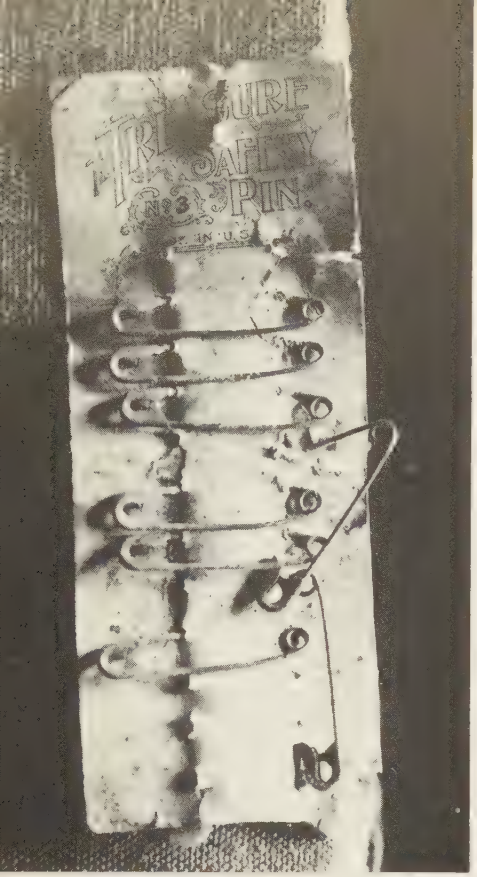
Historic huts read like page from Antarctic past

Of the two huts on Ross Island, remote from McMurdo Station, the one built by Sir Ernest H. Shackleton at Cape Royds is the older. It was built during his 1907-09 "Nimrod" expedition, some 22 miles from the present U.S. station, and was used to launch his expedition to within 97 miles of the South Pole. Sir Robert Falcon Scott, meanwhile, penetrated the icepack seven miles farther when he returned to Antarctica for his last expedition in 1911, and built his hut at Cape Evans. Both huts stand today as a tribute to the courage, dedication and tenacity of these early explorers.



READY AND WAITING, a hand saw and an old shoe (RIGHT) hang from nails in the hut, seemingly ready for another day's work around the hut Shackleton used as his base camp.

WIND AND SNOW BATTERED, Shackleton's hut (BELOW) has stood at Cape Royds on Ross Island since 1908. Scott refused him permission to use the one at Winter Quarters Bay.



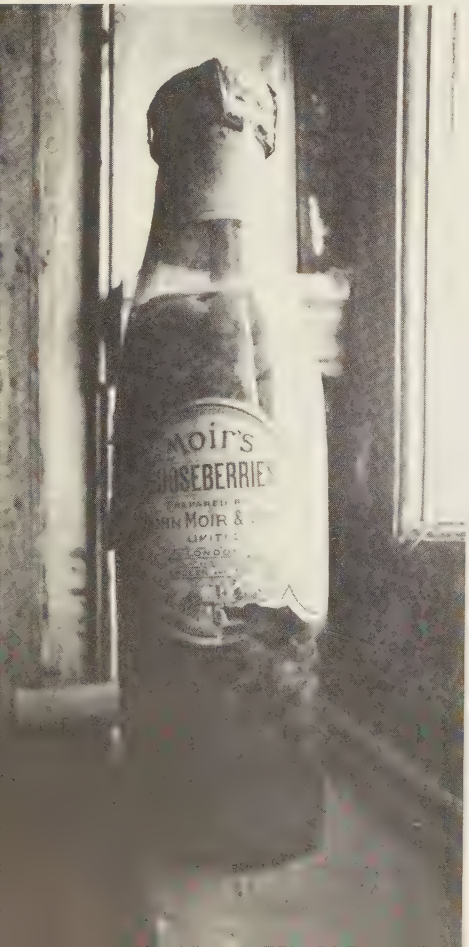
READY FOR SERVICE, a card of U.S. safety pins awaits a minor emergency, while (BELOW) a jar of gooseberries holds promise for dessert.

ASKING A ROYAL PRICE, the Illustrated London News of Feb. 28, 1908 offers (RIGHT) etchings of Queen Alexandra, wife of King Edward VII, of Great Britain. It was taken from her official portrait.

History is preserved in the polar air

HELLEU'S FINEST WORK.
The New Portrait
of
Her Majesty the Queen.
THE LIMITED EDITION
SIGNED AND NUMBERED PROOFS
25 5s.
THE QUEEN'S PORTRA
AND ALSO
THE PORTFOLIO OF HELLEU ETCHING
AT THE BOOKSELLERS'.

A LONG-HANDLED frying pan retains congealed grease used in cooking the party's final breakfast, while a kettle and pot seem only to wait the Shackleton expedition's return for lunchtime use.



INSIDE THE HUT, (ABOVE) a spacious area provided ample room for working on sledges and other equipment used by the expedition.

CHEMISTRY IMPLEMENTS, with some of the chemicals intact (RIGHT) give evidence of the scientific commitment of the expedition.

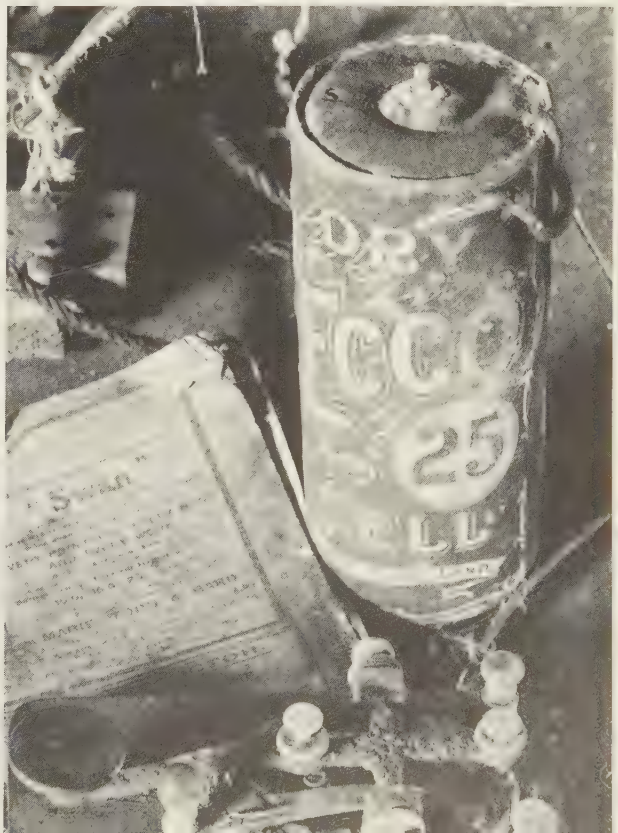
Scott built a staging hut at Cape Evans

PACKING CRATES REMAIN outside the Cape Evans hut from Scott's ill-fated expedition, when he arrived at the South Pole after Amundsen.

LEAVING THE HUT for their return to England, the party left much of their equipment (LEFT) like (BELOW) weather recording instruments.

REAL "FINNAN HADDIE" is among the supplies left in and around the huts (ABOVE) after the crew departed and returned home.

RUSTED SILENT, a telegraph key and dry cell battery (BELOW) no longer send messages to the nearby ship from the hut.



A look at fish survival finds a new "antifreeze"

Just as thousands of avid fishermen do on lakes all over the northern U.S. each winter, Dr. Art Devries and his wife Yuan probe beneath the ice for an unwary prey. They're not catching them for the freezer, however; they're trying to find out what substance in their blood allows them to survive in the below-freezing waters of the Antarctic. Such a discovery could aid in preserving blood in blood banks. Dr. Devries and his team of researchers from the U. of California at San Diego usually catch the DISSOSTICHUS MAWSONI, or antarctic cod, in waters registering at -1.9°C. The freezing point for this species is -2.1°C. These fish range in size up to five feet, and weigh up to 130 lbs. The hooks are attached to a winch holding 1,600 feet of cable.

LIKE THE LEADING PLAYER in an old Warner Brothers monster movie, a DISSOSTICHUS MAWSONI glares back after being winched to the surface.

DRAWING BLOOD SAMPLES from a freshly caught specimen, Dr. Devries is assisted by Aerographer's Mate Jerry Smith.

SETTING HOOKS, Smith (L.) and research assistant Gary Dobbs prepare to send the bait to the bottom of McMurdo Sound.

WEIGHING THE CATCH, Gary Dobbs notes the total, while two assistants raise the balance bar scales high.

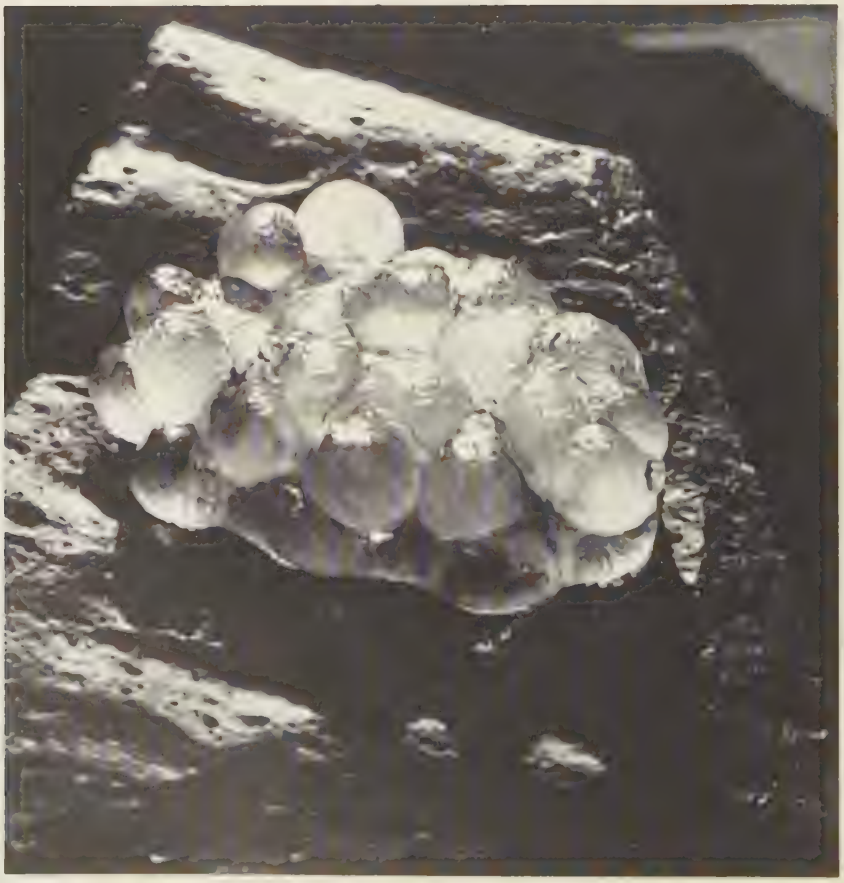
ALONG THE BOTTOM, many smaller bait fish serve as meals for the larger fish Dr. Devries and his team are studying.

They work as a team in obtaining data

EXPLAINING HIS FIELD, student Gary Dobbs tells of his research into the kidney functions of the MAWSONI they catch.

PREPARING TO EXTRACT a blood sample, Dr. Yuan Devries checks the syringe she will use to accomplish it.

SECURING A SPECIMEN before placing it in a watery coffin for transport back to the lab, the team (ABOVE) makes further tests.

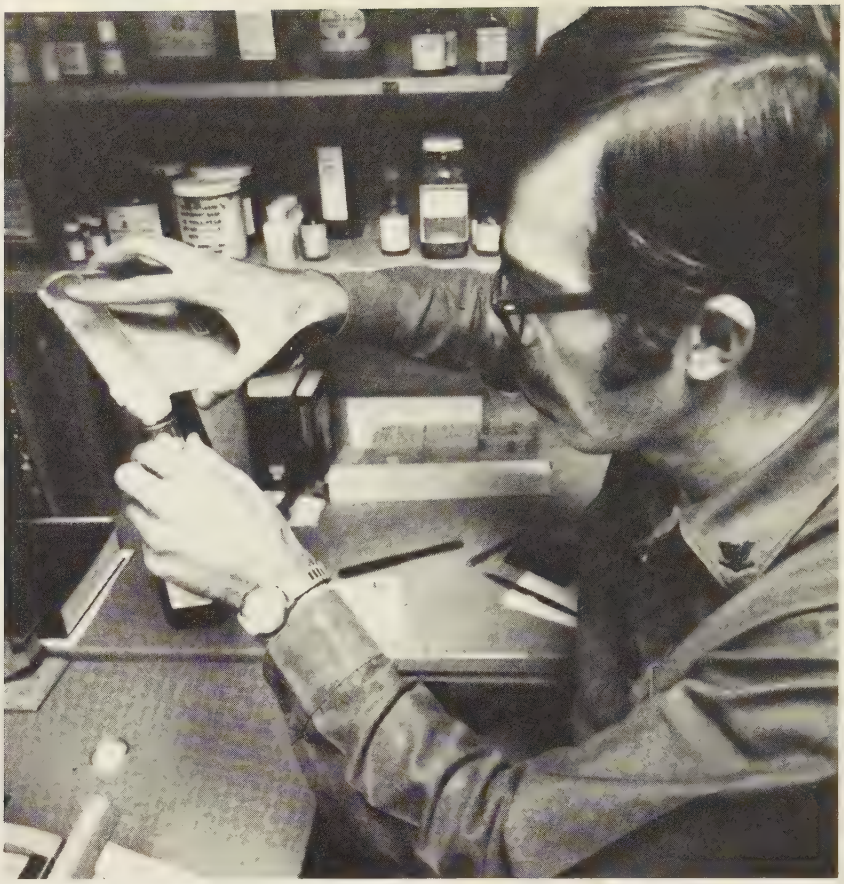


LIKE PRECIOUS JEWELS, a tight cluster of MAWSONI eggs (RIGHT) was secured from a sample used for freezing resistance research.

The results of research will aid all

CHECKING THE FEEDING HABITS of the large fish finds these varied specimens (LEFT) among the stomach contents.

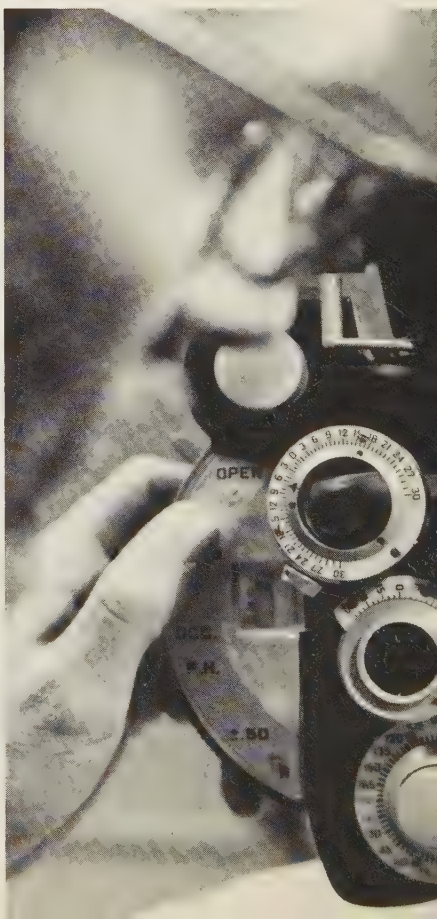
THE WARMING SEA ICE takes its toll at the end of the summer, and a tractor makes a narrow escape when pulling a fish hut back to shore.

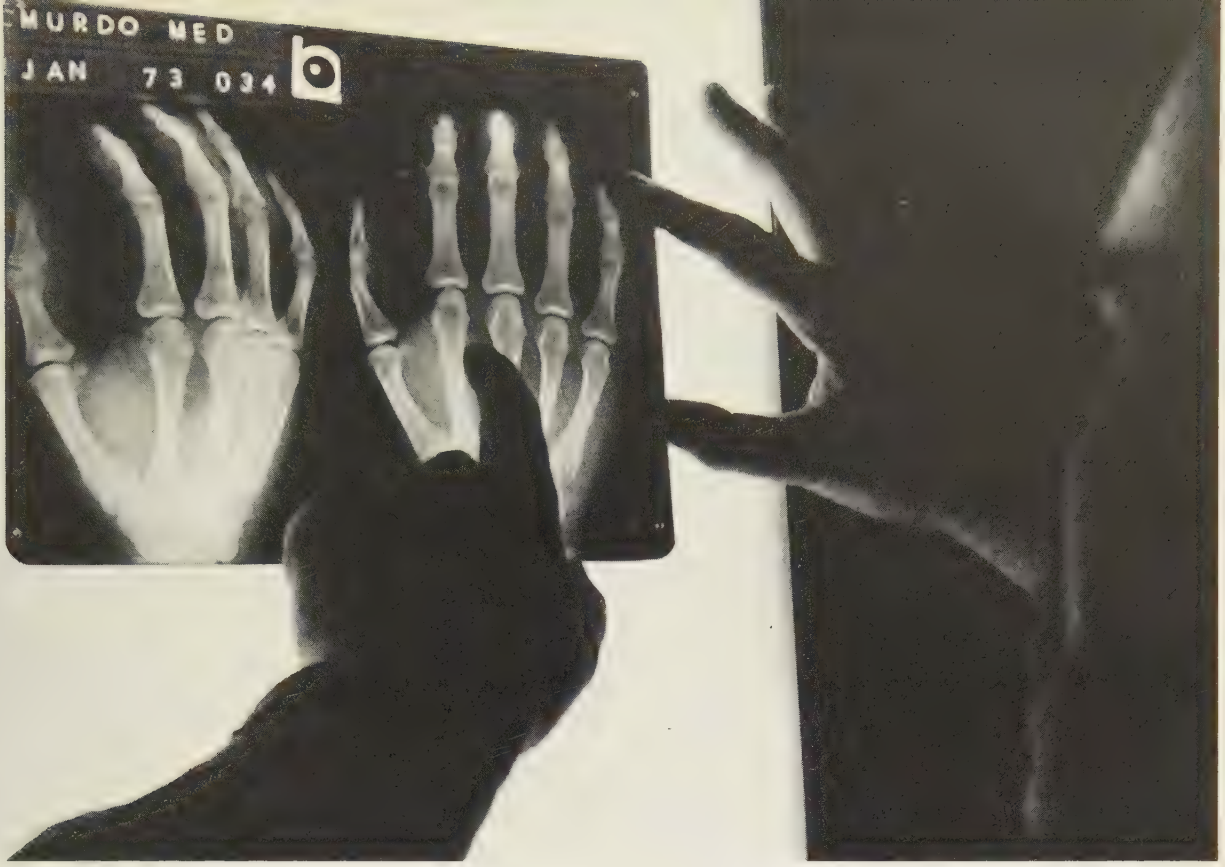


COUNTING CAREFULLY, Hospital Corpsman third class Mike Thompson fills a doctor's prescription for medication in the station pharmacy.

Polar health standards are stringently guarded

Modern-day sailors and scientists heading off for support and research roles in the U.S. program in Antarctica know they have passed a physical examination which would bring a smile to the lips of the most die-hard insurance executive. The long hours, rugged terrain, and sometimes extreme cold combine to produce a physiological and psychological circumstance not known anywhere else in the world. As only those in the best of physical condition are allowed to journey to the continent, much of the effort of the polar medical team is spent in promoting the maintenance of health, rather than the constant treatment of ills common to a more normal practice. Accident prevention is stressed from the top to bottom, but they're always ready to repair the usual small lumps and bruises of men doing a cold and tough job.

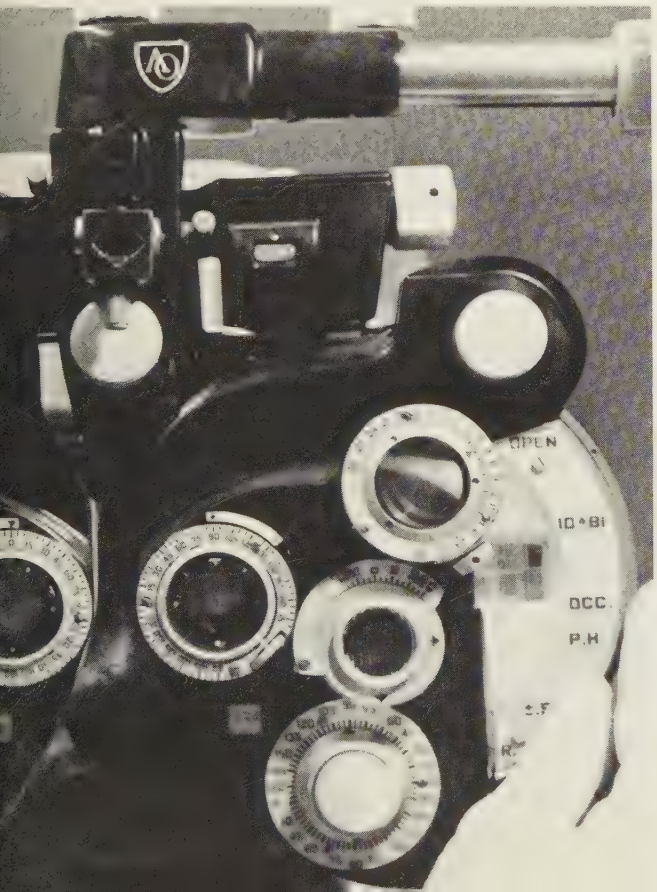




CAREFULLY ADJUSTING the maze of dials and pointers, a corpsman (BELOW) checks a patient for new eyeglasses.

THE EXPERT EYES of Hospital Corpsman first class Robert Shepherd (ABOVE) read an x-ray for a possible hand fracture.

TAKING AN EMERGENCY CALL, Chief Hospital Corpsman Melvin Epley (BELOW) puts the medical machinery into motion.

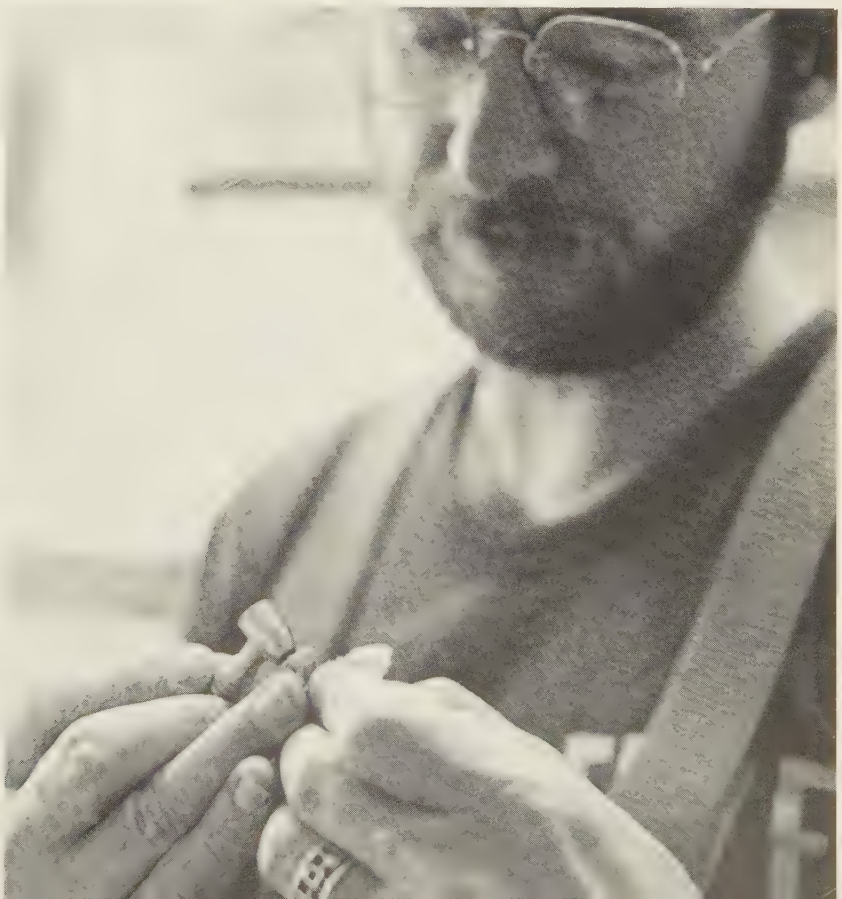


McMurdo General lacks only nurses to have it all

CHECKING A SPECIMEN, Hospital Corpsman first class Ken Craddock, (LEFT), heats it with a bunsen burner in the laboratory.

MAINTAINING DENTAL HEALTH, Dental Technician first class Thomas Hand (LEFT) checks and records the status of a patient's teeth.

RECEIVING A SLIT LAMP check (LEFT) Constructionman Edward Keuppers has his eyesight tested during a preventive medicine examination.



SMOOTHING A ROUGH SPOT, station dentist, Lieutenant Commander Earl Fisher (RIGHT) works on a patient's denture.

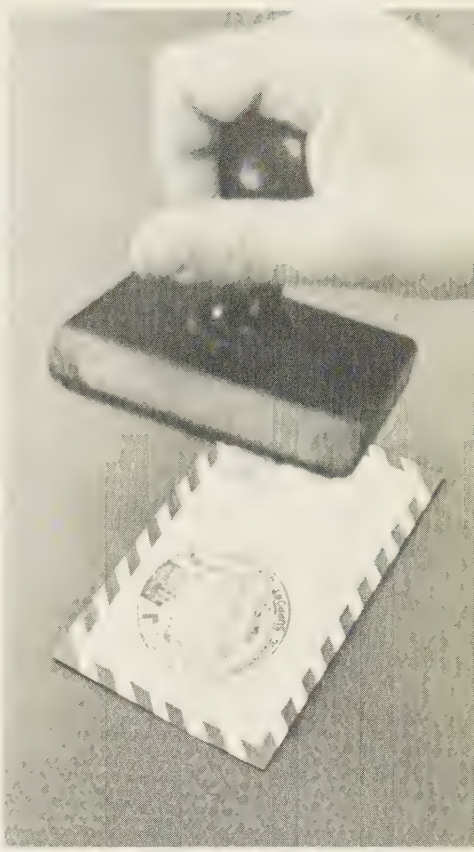
LIFTING A MAIL BAG for transport to the post office, Postal Clerk third class Gerry Aten prepares to sort it for delivery.

SORTING THE MAIL into unit boxes, Postal clerk second class David Magness (RIGHT) speeds it on its way to eager Antarctic readers.

Snow doesn't deter them from the appointed round

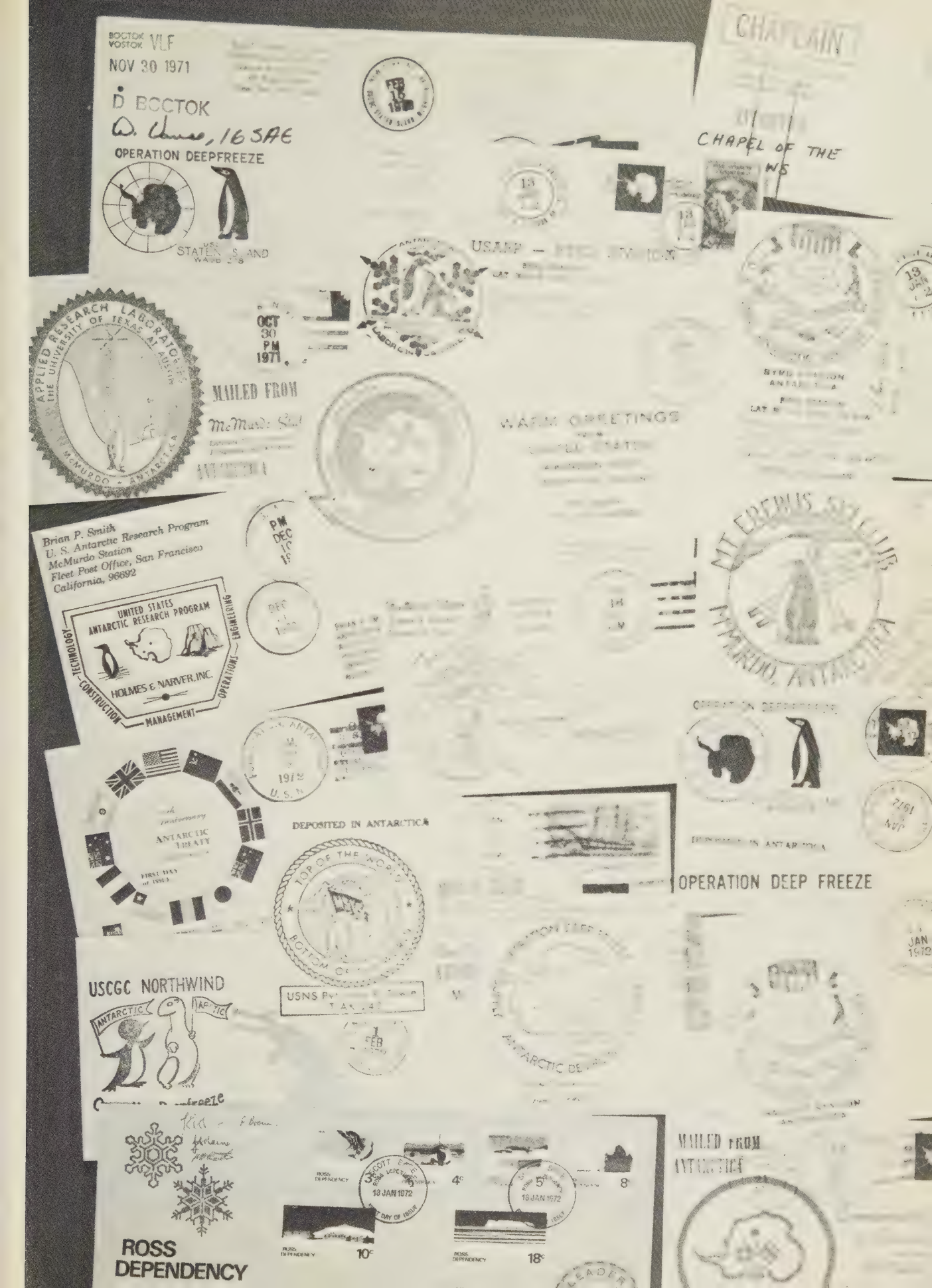
The ultimate proof of the postal worker's motto that "the mail must go through" can be evidenced in the lengthy pipeline and often unyielding conditions of its delivery in the hostile Antarctic. The McMurdo office is the central sorting point for U.S. stations all over the continent, and handles more than 100 tons of correspondence and packages yearly, in breaking them down for further transport to Siple, South Pole, Hallett Station and Byrd Camp. In addition, the McMurdo office is a transit point for mail going to and from the New Zealand crew at nearby Scott Base. Of great interest to many around the world is the service granted to those interested in the study of postage stamps, cancellations, and other related items. These "philatelists" send more than two hundred pounds of envelopes annually, asking that they be imprinted with specially designed hand stamps which usually indicate the location and other distinctive data wanted by collectors.

DELIVERING THE MAIL at the end of its 10,000-mile journey from the U.S., Postal Clerk third class Mike Bayles (RIGHT) finishes the chain.



A CACHET (ABOVE) is applied to a letter before mailing. (OVER-LEAF) The collection of covers and cachets from Antarctica is a major hobby.

OPERATION DEEP FREEZE
DEPOSITED IN ANTARCTICA
SOUTH POLE
NEUTRON MONITOR
SOUTH POLE
MESON TELESCOPE
OPERATION DEEP FREEZE
SIPLE STATION
ANTARCTICA
76° S 84° W
MAGNETOSPHERIC
RESEARCH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NOV 30 1971
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OPERATION DEEPFREEZE
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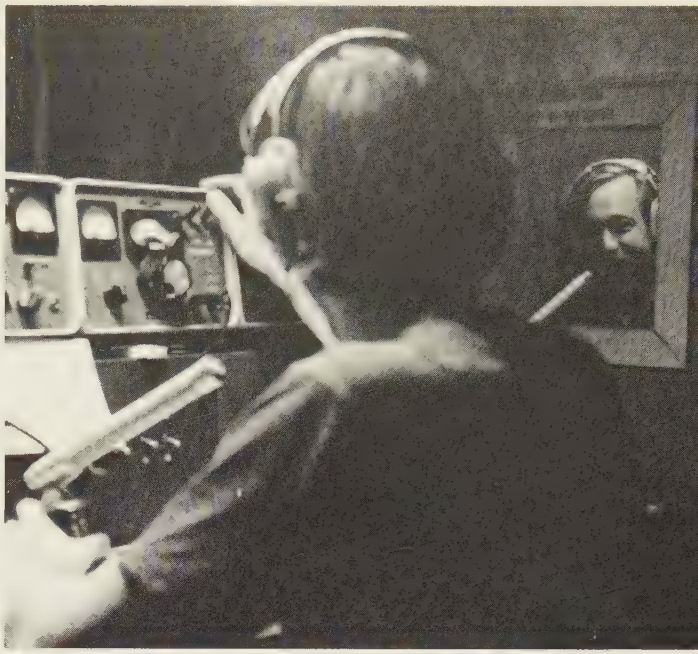
CHAPEL OF THE
USARP
OCT 30 PM 1971
MAILED FROM
WARM GREETINGS
Brian P. Smith
U. S. Antarctic Research Program
McMurdo Station
Fleet Post Office, San Francisco
California, 96692
UNITED STATES ANTARCTIC RESEARCH PROGRAM
HOLMES & NARVER, INC.
TECHNOLOGY
CONSTRUCTION
MANAGEMENT
OPERATIONS
ENGINEERING
DEC 1 1971
DEPOSITED IN ANTARCTICA
TOP OF THE WORLD
OPERATION DEEP FREEZE
USCGC NORTHWIND
ANTARCTIC
ARCTIC
ROSS DEPENDENCY
18 JAN 1972
MAILED FROM ANTARCTICA

Nothing says it like "I love you — over"

Wanting a "patch" in the not-too-distant past meant fumbling with a vulcanizing kit, applying a foul-smelling glue and waiting until someone ran and found a match - then seemingly hours later the flat was fixed and you were back on the road. To men in Antarctica a "patch" is a chance to hear the good news, the bad news, the everyday news, or just the sound of the person's voice who's giving you the news. The amateur radio facilities at McMurdo Station (KC4-USV) and Williams Field (KC4USX) serves the men at these locations, and brings home just a bit closer than the 10,000 miles they are separated from their families. A record was established in December 1972 when KC4USV patched 1,186 phone calls and sent 368 HAM-grams from the 2,000 watt rig.

RUNNING A PATCH, chief operator Radioman first class Melvin Pennington (L.) is assisted by Commissaryman first class Ernest Stander.

LOCATED REMOTELY from the town center of McMurdo, Pennington (RIGHT) often gets a chance to show his culinary abilities at meal time.

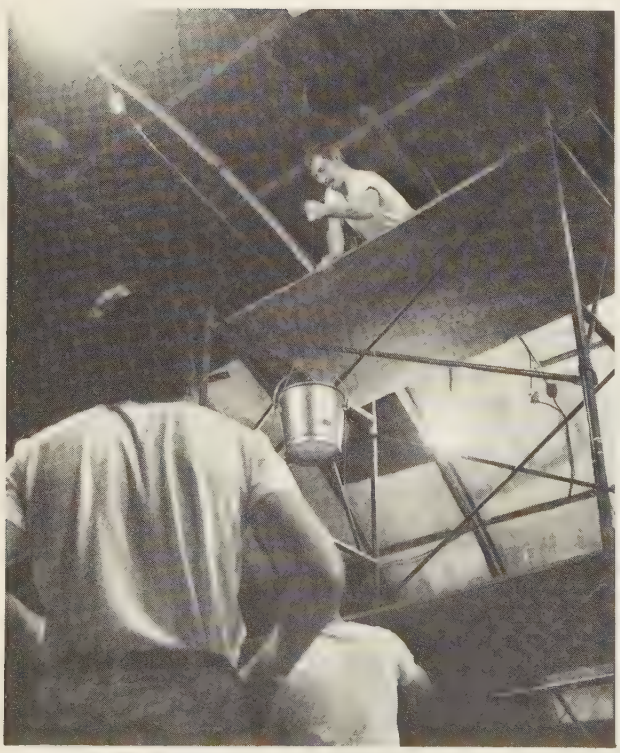


GETTING THE "GO" SIGNAL, (ABOVE) Aviation Survival Equipmentman third class Dennis R. Knipfer (R,)starts his conversation. (BELOW) Radio amateurs from around the world send cards to verify radio contact.

"Do-it-yourself" nets McMurdo a new gym

It started life as a helicopter hangar for the short range birds used around McMurdo on the million and one tasks the versatile craft are so good for in the Antarctic. When the new hangar was built, it became a warm warehouse for stores. Each year when the supply was used up, it became a gym. With the lack of indoor recreation a problem in Antarctica, volunteers went to work to make the structure a permanent gym. Three-quarter-inch plywood was used to lay a new deck, which was lined out for basketball, volleyball, tennis and badminton. A wall was erected for single-wall handball, and the remaining walls were insulated and covered with quarter-inch ply. Then the painting began, and soon McMurdo had a full-time downtown sports arena to boast about.

ON THE SCAFFOLD, two volunteer painters (RIGHT) use long-handled rollers to paint the ceiling of the new McMurdo gymnasium.



STEADY AS SHE GOES, Lieutenant (jg) Marcel Lonneman hauls a fresh supply of paint up to his scaffold, to resume his volunteer task.

LIKENING HIS WORK to that of Michaelangelo on the Sistine Chapel, Lieutenant (jg) Bill Wallace rests a moment from his painting.

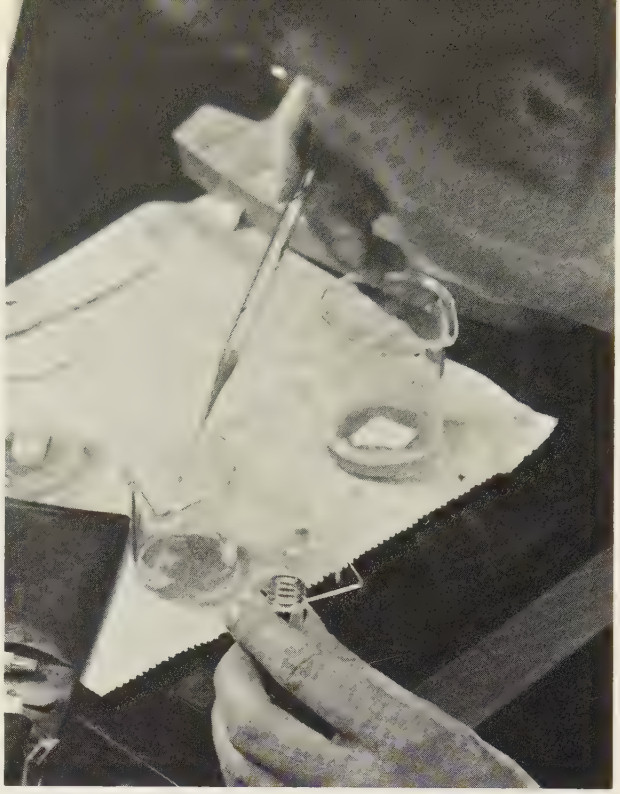
KEEPING UP THE SUPPLY, Dave Bresnahan, of the National Science Foundation, passes more paint. (BELOW) Mc Murdo basketballers vie for the first ball to inaugurate the new sports facility.

RV HERO probers study animal and marine life

The research ship Hero uses diesel or, for silent running, sail. It has well equipped lab spaces and is used each summer in the Antarctic Peninsula area, in conjunction with Palmer Station, for research in marine biology, bioacoustics, and physical oceanography, and also for transport of researchers to field locations. Specially strengthened for operation in ice, the 125-foot ship carries 10 scientists and a crew of twelve. Built in 1968, the brightly-colored wooden trawler was named after the sloop of Nathaniel B. Palmer, who in 1820 was the first U.S. citizen to see the antarctic continent. In winter, when darkness and ice prohibit work in the Antarctic, Hero supports research along the coasts of lower South America. Hydrospace Challenger Inc. of Miami, Florida, operates the National Science Foundation ship.

IN THE LAB, a tiny crustacean dredged by a Hero crewman is measured and studied by researchers probing the antarctic seas.

WORKING THE NETS, Hero crewmen (ABOVE) prepare to lower them again to capture specimens for study of ice pack fish species.



IN THE LAB, a researcher (ABOVE) makes a test of a water sample to determine the chemical structure of a specimen's habitat.

UNDER SAIL, RV Hero (BELOW) works an area of the Antarctic Peninsula coastline collecting data and specimens near the shore.

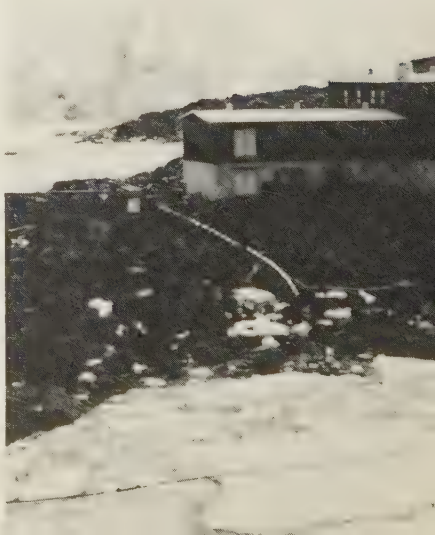
EXTREMELY RARE, this Sea Spider (Dodecolopeda Mawsoni) found near Palmer Station by Dr. Everett Douglas, is one of six found since 1935.

Palmer Station located in polar banana belt

The United States Antarctic Research Program station on Anvers Island in the Antarctic Peninsula is named Palmer Station after the early U.S. sealer. The present structure was erected in 1967 to replace the original camp built in 1965. The first station, a prefabricated building and a British IGY hut, is now used as an emergency camp. The base is the only U.S. station resupplied exclusively by sea, as there are no landing facilities available for long range cargo aircraft nearby.

Palmer Station, at only 64°S. latitude, enjoys an annual mean temperature of 26°F., making it the warmest of all U.S. research stations on the Antarctic Continent. In the balance, however, while the South Pole records an average of only two inches of precipitation annually, coastal Palmer measures about 23. The station operates in close cooperation with scientists aboard RV Hero but also serves those doing on-shore research work in this unique polar area.

ON ANVERS ISLAND, in the Antarctic Peninsula, Palmer Station (BELOW) supports the research efforts of the National Science Foundation vessel RV Hero and on-shore studies in the somewhat warmer polar area.



ARRIVING AT PALMER STATION, the crew of the Chilean ship Yelcho prepares to come ashore for a visit. (RIGHT) Station personnel unload cargo from USNS Mirfak for use in scientific programs.

FLOATING PIECES OF ICE SHELF dwarf a helicopter from the USCGC Glacier (WAGB-4), flying a mission, placing scientists for study.

Glacier is vehicle for research in Weddell Sea

After USCGC Glacier (WAGB-4) used her 16,900 total horsepower in helping USCGC Northwind (WAGB-282) in cutting the year's relatively short channel through the ice pack to McMurdo Station, she set about another task, that of steaming to the Atlantic side of the Antarctic Continent, to serve as a floating platform for researchers probing the Weddell Sea. The 16 scientists on board studied such varied disciplines as the formation of Antarctic Bottom Water in the Weddell Sea, the air-sea interactions, birds of the ice pack, and a thermohaline convection study. In conjunction with the latter, Glacier recovered a current meter array placed by Dr. Thor Kvinge, University of Bergen Geophysical Institute, in 1968. Dr. Kvinge and Glacier crewmen located and retrieved the instrument in 2,000 feet of water, Dr. Theodore D. Foster, Scripps Institution of Oceanography served as the National Science Foundation representative for the expedition.

GLACIER'S LINES frame Mt. Erebus, an active volcano, (BELOW) while the ship aids in cutting the channel to McMurdo Station.

PUSHING THROUGH PACK ICE, Glacier (ABOVE) serves as research vehicle for scientists studying in the Weddell Sea.

A CURRENT MEASURING DEVISE is retrieved by scientists (BELOW) who will use the stored information to determine drift patterns.

TAKING WATER SAMPLES, Navy divers (ABOVE) toss a specimen bottle between floes. (LEFT) A silver-suited crash crewman waits during the landing of a helicopter bringing scientists back to the ship.

Icebreaker duty found quite varied

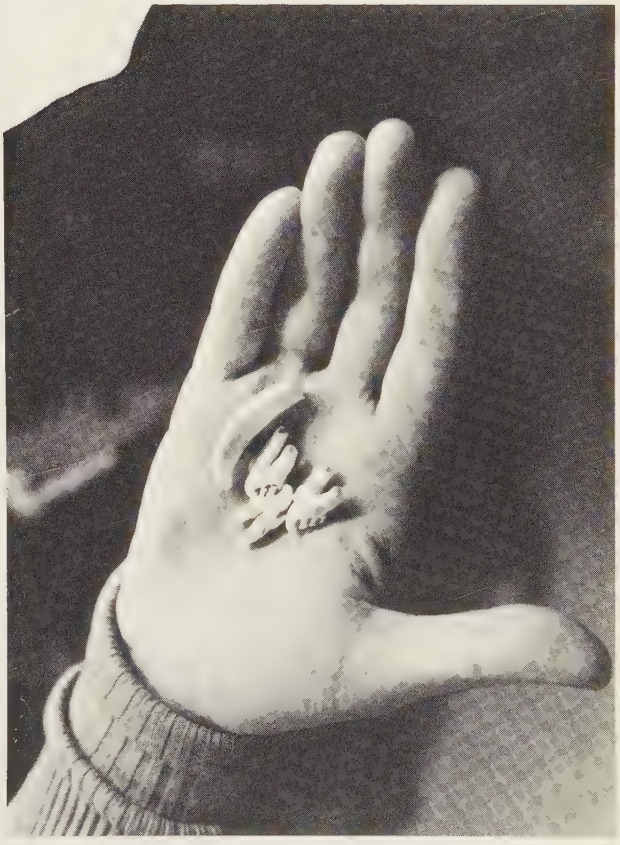
STOWING LINES, (RIGHT) Glacier crewmen practice safety in eliminating hazards throughout the ship. (FAR RIGHT) A helicopter crewman signs the maintenance sheet after Lt. Commander K. F. Hsu's flight.

Weddell Seal is studied by two university groups

Two studies of the Weddell seal are being conducted in the McMurdo area, to learn more about the movement and migratory patterns of these mammals, and to gain a better understanding of the physiological make-up which prompts such behavior. Dr. Donald B. Siniff of the U. of Minnesota is tagging seals with small radio transmitters and releasing them for tracking under water, while Dr. Robert E. Coalson of the U. of Oklahoma Medical Center, is making anatomical investigations of both young and adult seals to correlate body structure and habits by studying young seals at birth, and other specimens in later development.

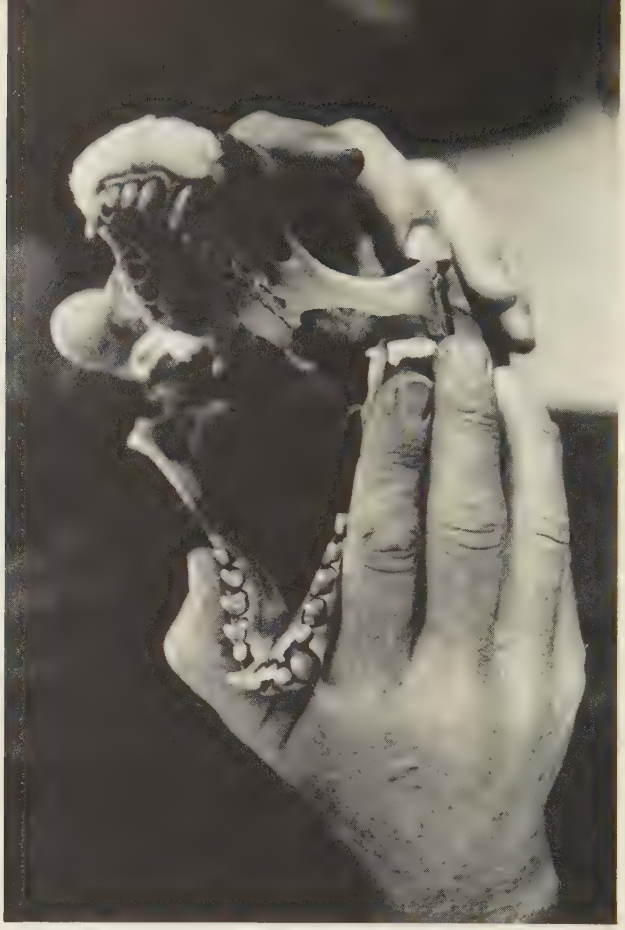
APPROACHING A WEDDELL SEAL, scientists (RIGHT) prepare to temporarily immobilize her by hooding, so that they may attach a radio transmitter, while (BELOW) another seal and her pup lie on the ice.

ATTACHING A TRANSMITTER, scientists will track the seal underwater with receiving equipment.



IN THE LABORATORY, a scientist holds several seal's teeth in his palm.

YAWNING LAZILY, a Weddell seal pup shows a mouthful of very strong teeth.



A SEAL SKULL demonstrates the jawbone structure of the young Weddell seal.

Seals are preserved for further study

TAKING BLOOD SAMPLES, Dr. Robert E. Coalson, U. of Oklahoma (LEFT) embalms a specimen so it may be transported for further study.

DURING THE OPERATION, the scientists carry out procedures (RIGHT) which will preserve the seal so that internal organs and the central nervous system may be closely examined.

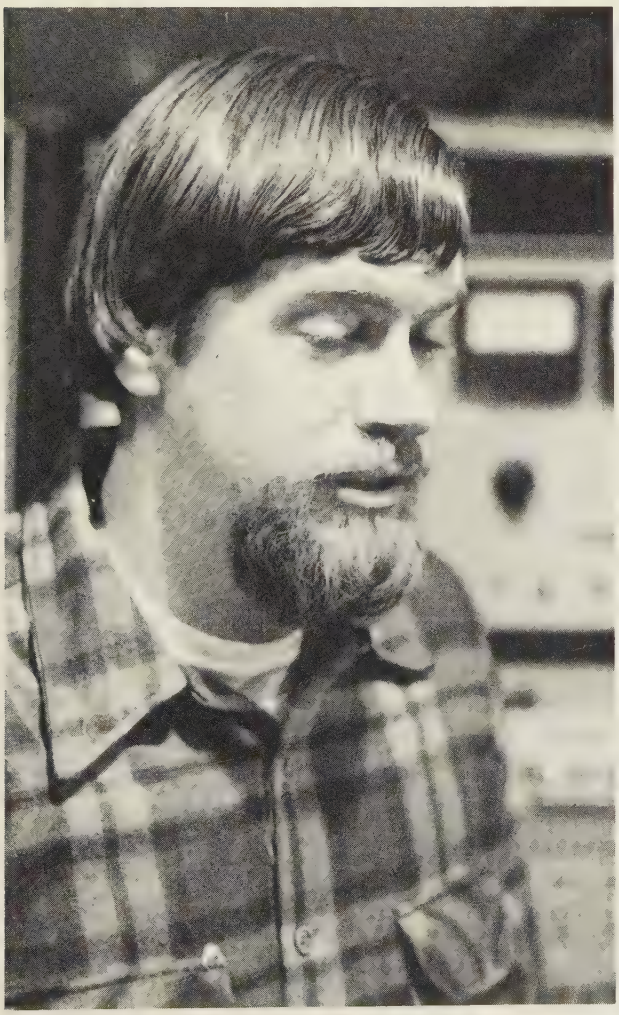
STARTING THEIR PROCEDURE (LEFT) Richard Sinclair (L.) and Alastair Watson hold clamps while another researcher makes the incision.

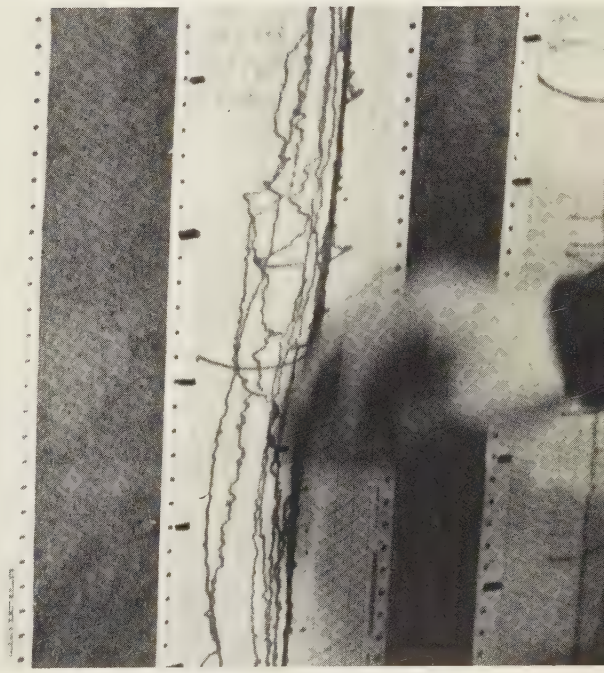
Upper atmosphere noise measured by riometer

Another program tied in with similar activity in another area is the ionospheric study of the McDonnell Douglas Astronautics Company at McMurdo, which is the magnetic conjugate of a similar station at Shepherd Bay, N.W.T., Canada. They measure the signal strength of charged particles in the magnetosphere with a riometer, or relative ionospheric opacity meter.

CLIMBING THE ANTENNA, John Bowers (RIGHT) strengthens a guy wire to stabilize it against the frequently strong polar winds.

APPROACHING THE LAB, Bowers prepares to set a new frequency after making an adjustment to the finely tuned receiving antenna.





CHECKING A GRAPH, Bowers notes the record of a large solar disturbance which caused a total blackout of communications.

IN THE LAB (LEFT) Bowers discusses his program. Behind him is some of the research equipment used in his study.

ADJUSTING THE GAIN control, Don W. Baker tunes in a satellite signal to record the data being transmitted back to earth.

Two year-round studies are looking at the sky

Two more National Science Foundation-sponsored research programs concerned with atmospheric sciences are the University of Texas satellite tracking and recording program, and the Bartol Research Foundation's cosmic ray study. More than 1,000 artificial satellites pass within the range of the McMurdo facility's receiving equipment each month, and data transmitted from them are recorded for correlation with information received from a world-wide network of similar stations. Because of its unique polar position, this site gives valuable information which is being used in the study of the earth's gravitational field. In addition, the motion of the earth's spin axis is measured by recording variations in the satellite orbits. Cosmic rays (or ionizing radiation from outer space) are studied at McMurdo as well as the South Pole, and correlated with similar stations in Greenland and Pennsylvania. Variations are noted, after detection with a meson telescope.

SETTING THE RECORDER, Dennis Farr calibrates a partical-counting graph in the Bartol Research Foundation's cosmic ray laboratory.

MAKING A READING, Brian P. Smith obtains data from signals transmitted by a satellite passing many miles above the earth.

PERFORMING MAINTENANCE, Dennis Farr insures the cosmic ray recording equipment will maintain reliability.

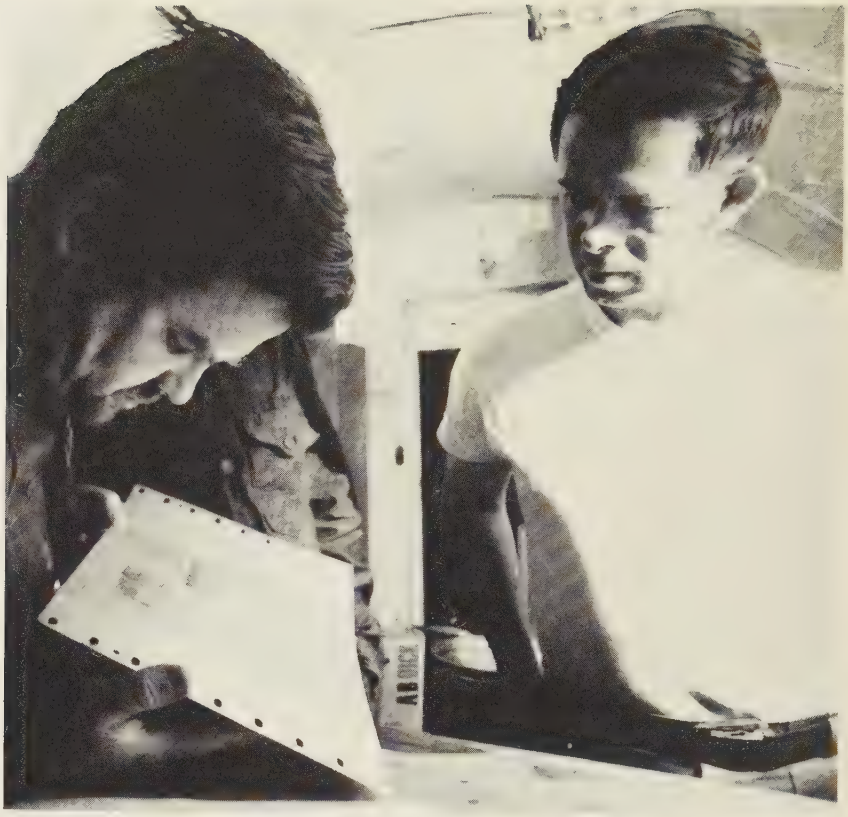
Radio aurora studies resume after repairs

A program to study radio aurora - as distinct from the more familiar visual aurora or "northern lights" for those in North America - is being conducted by the Stanford Research Institute of Stanford University. It has been resumed after repairs and modifications were prompted by a 175 mph wind which struck McMurdo Station during March 1972. The antenna is 100 feet tall with a 63 feet rotating yagi boom.

HIGH ATOP THE ANTENNA, Bill Crossman (RIGHT) places safety bolts into the rotor head to insure its safety during operation.

COMPLETING PREPARATIONS, the repair party makes ready to start the winch which will lift the antenna into place.

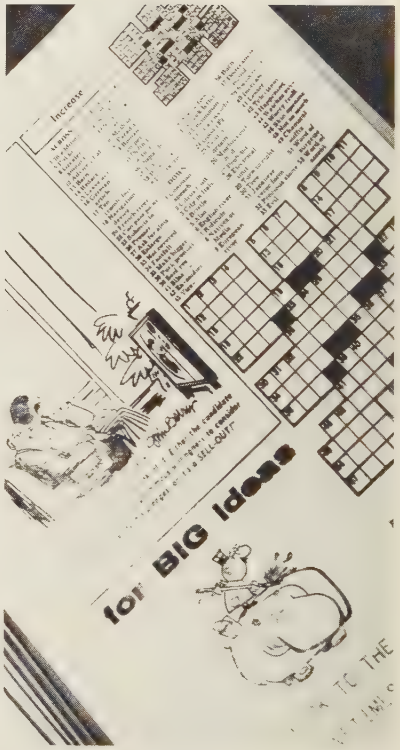
A GENTLE NUDGE is used by Bill Crossman (LEFT) to align the rotor base plate prior to securing it for operation.



CHECKING A METAL PLATE before printing, Lieutenant Commander Ralph Lewis (RIGHT), task force photographic officer, assists Chief Journalist Bill Neal (R.) in preparing the "Sometimes."

Public Affairs staff gives news daily

Every large town, and especially one as remote as McMurdo Station, wants to know what is happening in the rest of the country and the rest of the world. Trying to keep Antarctic sailors and scientists informed is the task of the public affairs staff of the task force. In addition to telling the rest of the world what is going on in Antarctica, they spread news through the continent with a daily newspaper called the "McMurdo Sometimes." Seven days a week McMurdo men, and outlying stations, when aircraft are flying, can read world and local news, features, items of interest, and command news in addition to comics, quizzes and puzzles. For those who depend on the electronic media for their news, the staff gives the round-the-clock offerings of radio station WASA, FM-100. One of the most successful ventures of the station was the world military record-breaking marathon effort of 72 continuous hours of broadcasting, at Christmas time.



FEATURE OFFERINGS in the McMurdo "Sometimes" are one of the popular sections of the paper, providing laughs and entertainment.

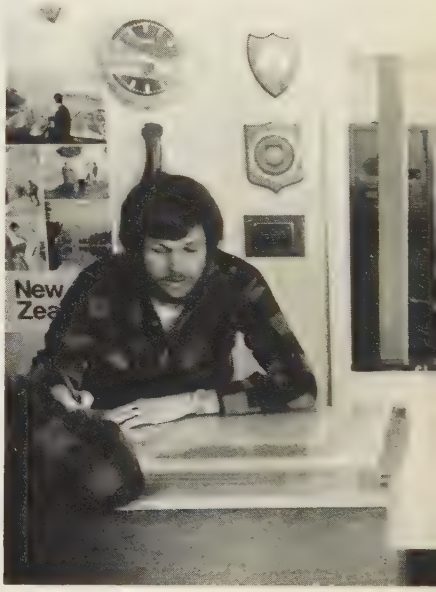
PROVIDING NEWS to station personnel (ABOVE) Journalist third class Peter Matuza operates the multilith offset press.

MARATHON-RECORD-HOLDING disk jockey Radioman second class Al Bray talks to his audience, as Yeoman "Country Bob" Stone assists.

CUEING A RECORD, Journalist Jay Ross Kovitz (ABOVE) prepares an American Forces Radio half-hour transcription for broadcast.

Scott Base residents make good neighbors

McMurdo Station's neighbor, two miles to the south, is New Zealand's Scott Base, named for the British explorer who lost his life in the quest for the South Pole. Various earth, biological, and atmospheric science programs are carried out there, some on a year-round basis. Scott Base men join with McMurdo's crew often to celebrate each other's holidays and spread large measures of international good will.



WEDDELL SEALS lounge on the sea ice (BELOW) in front of the tightly clustered group of buildings which comprise Scott Base.

CHECKING SCIENTIFIC EQUIPMENT, Electronics Technician David Randall, of Wellington, N.Z., insures its proper operation.

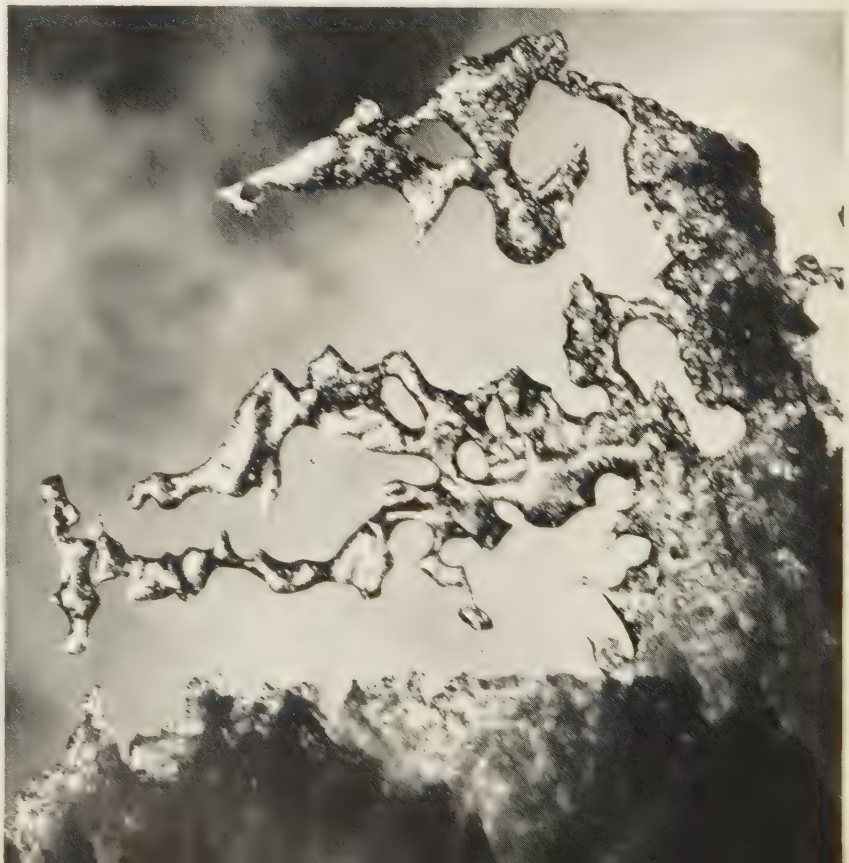
RINGING NEW ZEALAND, Chief Journalist Bill Neal (ABOVE) uses the popular radio-telephone facility to talk to a distant friend.

IN WRIGHT VALLEY, one of the so-called "dry valleys" (ABOVE) New Zealand maintains Vanda Station, a remote science site.

SCULPTURED IN ICE, a formation of frozen Ross Sea water provides an abstract surprise for a scientist probing the area.

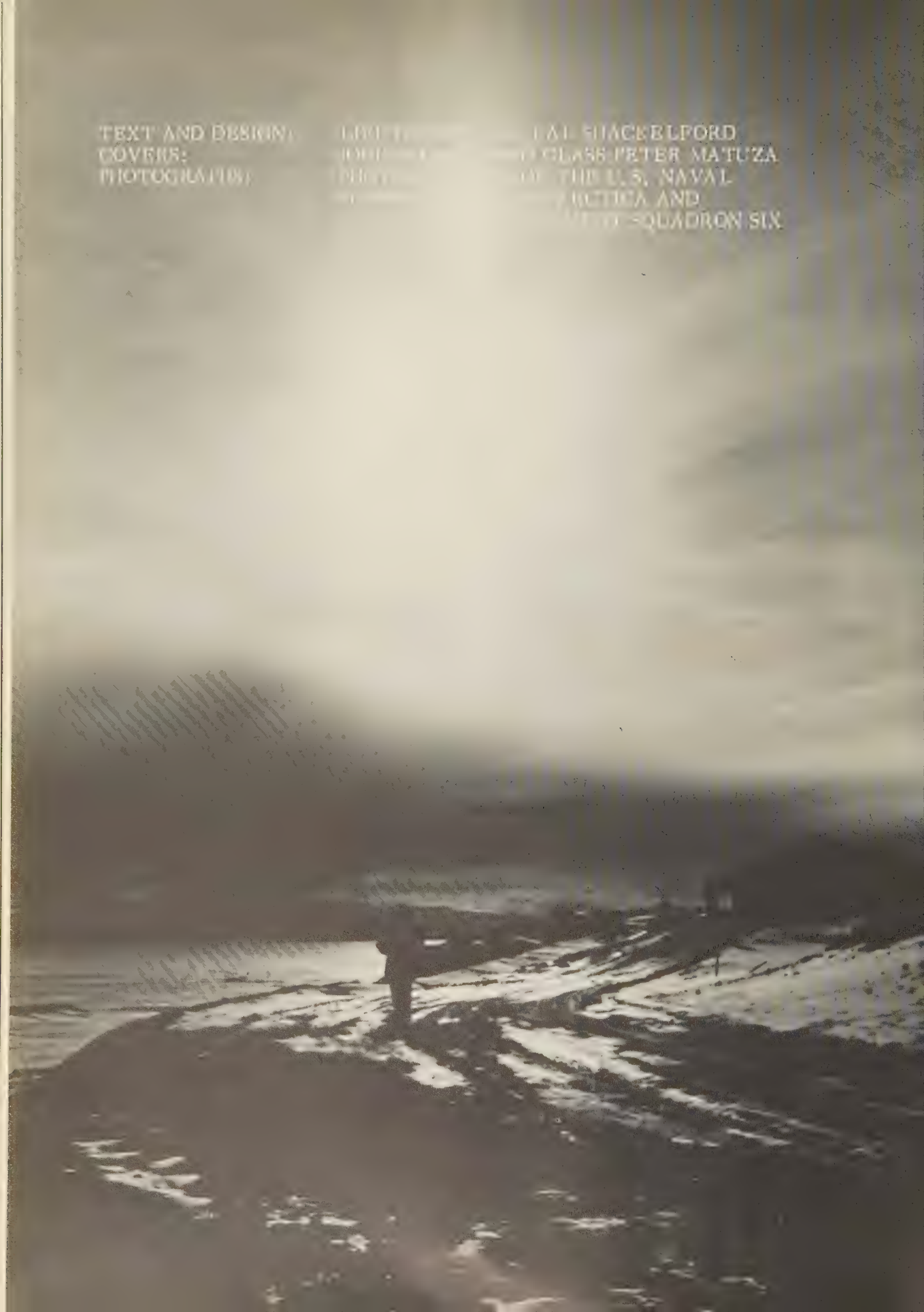
Antarctic beauty remains a new look

Antarctica is a land of endless beauty, and means different things to each man or woman who beholds it. Some are there to probe the secrets of science, while others come to provide support to these research efforts. None escape the grandeur of the surroundings, and some become so enchanted with what must indeed be the world's last frontier that they continue to return for the rest of their lives. For these people, Antarctica will continue to provide - a new look.



GLACIER TONGUES head toward Lake Meirs in Meirs Valley (L.) one of the dry valleys near McMurdo Station where research is conducted.

REFLECTING THE IMAGE of the scene surrounding it, Don Juan Pond (R.) in Wright Valley is probed for a clue to its great salinity.

SEARCHING FOR SITES for research, a team of scientists (BELOW) photograph areas which will be further explored in future years.

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